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Francis J. A. Morris
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May 10th 1901.

FLOWERS OF THE FIELD

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BY THE LATE

REV. C. A. JOHNS, B.A., F.L.S.

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1899

Twenty-ninth Edition

Entirely rewritten and revised

BY

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Dedicated,

BY GRACIOUS PERMISSION,

TO

HER ROYAL HIGHNESS PRINCESS ALICE MARY
OF ALBANY.

INTRODUCTION.

PART I.

EXPLANATION OF TERMS.

The object of this volume is to introduce the lover of Nature to an acquaintance with the common British flowering plants, to teach the unscientific how to find out the names of the flowers met with in the course of country rambles. Such a knowledge of plants, it may be said, and said with truth, is not Botany; but it is a step towards Botany; for there can be no doubt that scientific treatises on this subject would often be studied with more pleasure if the reader were familiar with the outward appearance of the examples quoted; just as we take greater interest in accounts of astronomical discoveries if we have seen and handled a telescope than if we had merely had one described to us, no matter with what accuracy and minuteness. The reader, or, inasmuch as even the elementary knowledge of a science can only be attained by study, the *student*, who wishes to make this volume practically useful is recommended to read with care and attention the following pages, into which the author has introduced nothing but what is essential to the proper understanding of the body of the work.

Before a novice can commence the study of any science, he must make himself acquainted with the terms employed by writers on that science, and he

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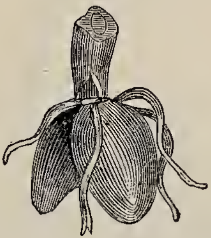
must not be frightened if things new to him should have strange names. Unmeaning and hard to be remembered they must appear to him at first, but this will be only as long as they remain mere sounds. When he has gained a knowledge of the *things* for which they stand, they will lose their formidable appearance, and, hard as they may still be to pronounce, they will very soon become familiar to the mind, if not to the tongue. In a scientific treatise on Botany, taken in its widest sense, these terms must of necessity be very numerous; but not so, however, with a popular description of the plants growing wild in a single country of limited extent. The author has, therefore, endeavoured to keep technical terms as much as possible out of sight, in the hope that the lover of Nature may be beguiled into forming an acquaintance with the outward appearance of the plants of his neighbourhood, and eventually be induced to study them more in detail. He has, consequently, avoided the use of Latin words wherever English ones would do as well, and has not dealt with the internal structure of plants, or with any organs but those with which it is necessary that the student should be familiar before he refers to the body of the work for a description of any plant which he may have found.

The organs of a flowering plant may be described under the heads of ROOT, STEM, LEAF, HAIRS, INFLORESCENCE, BRACTS, FLOWER, RECEPTACLE, CALYX, COROLLA, STAMENS, CARPELS, FRUIT, and SEED.

The ROOT may be the direct downward prolongation of the axis of the seedling plant, when it is called a *tap-root*. It is then sometimes enlarged and fleshy, as in the *conical* root of the Carrot and the Parsnip; or it may be much *branched*, as in the Wallflower. Roots given off in no definite order, such as those which spring from the base of bulbs or from other stem-structures, are termed *adventitious*.

They are generally fibrous, as in Grasses ; but may be swollen, as in the Dropwort, when they are termed *nodulose.* Such swollen roots, if clustered together, as in the Lesser Celandine (p. 17), are called *fasciculate.* In many Orchids two fibres or two groups of confluent fibres are enlarged into what are termed *tubercles*, and the root is then called *tuberculate.*

The slender branches of roots are called *rootlets;* but the actual absorption of liquid food from the soil is often performed by *root-hairs*, very delicate hairs, almost microscopic in size, which occur on the surface of young roots. Old roots of trees become corky like stems.



Tuberculate root of an Orchis.

The STEM bears *buds*, which unfold either as elongating *shoots*, or as *flowers.* The points on the stem where the leaves are given off are termed *nodes.* They are sometimes swollen, as in the Persicaria (p. 624) and most of the Pink family. The space between two successive nodes is called an *internode.* In many herbaceous plants the internodes are short, and the nodes consequently crowded and the leaves in a tuft or rosette, as in the Daisy (p. 372) and the Primrose (p. 470).

The stem may be *unbranched;* but is more commonly *branched*, each branch originating in a bud in the angle between a leaf and the stem. This angle is called the *axil* of the leaf, from a Latin word meaning the arm-pit, and such a bud is, therefore termed *axillary.*

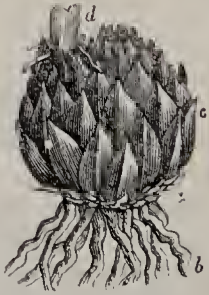
Many quick-growing stems, especially among Grasses and the Umbelliferous family (p. 278), have hollow or *fistular* internodes.

Stems may be underground or aërial, the chief forms of underground stems being the tuber, the corm, the bulb, the rhizome, and the sucker.

The *tuber* is a fleshy rounded structure giving off few, if any, roots, and bearing scattered buds, being made up of several internodes, as in the Potato and the Black Bryony.

Portion of a branch with leaf *l* and bud *b*.

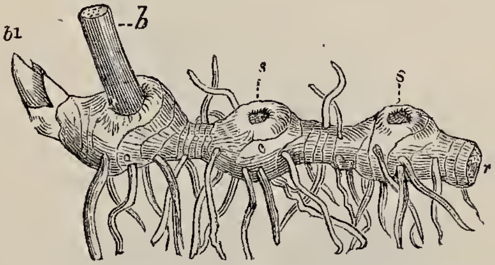
The *corm* is a short, thick, solid stem, generally of one internode, giving off roots below, and bearing buds on its upper surface, as in the Snowdrop, Crocus, Lords-and-ladies, &c.



Scaly bulb of the Lily: *a*, shortened stem; *b*, fibrous roots; *c*, scales; *d*, flowering stem.

The *bulb* is a short stem made up of many unelongated internodes and enclosed in numerous fleshy leaf-scales. When these are narrow and overlap like tiles, as in Lilies, the bulb is called *scaly;* when they are sheathing and concentric, as in the Onion, *tunicate.*

The *rhizome,* or *rootstock,* is an elongated stem bearing scale-leaves and adventitious roots at its nodes. It generally grows horizontally and is fleshy, as in Solomon's-seal and Iris; but it may be slender, as in Couch-grass and Sand-sedge. When the older portion dies away it has an abrupt or *premorse* (bitten off) end, as in the Devil's-bit Scabious (p. 361) and the Primrose.



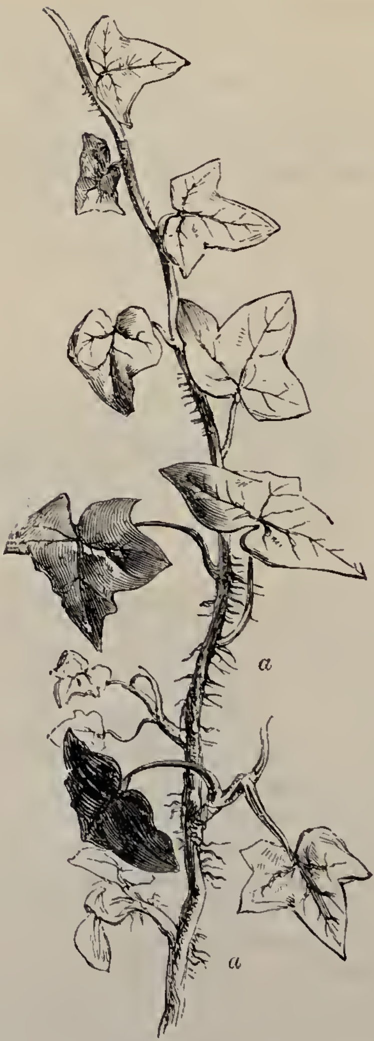
Portion of rhizome, *r*, of the Solomon's-seal; *b*′, terminal bud; *b*, a branch; *s*, *s*, scars produced by the decay of old branches.

The *sucker* is a branch, or secondary stem, given off underground and rising to the surface, as in the Common Elm, Mints, and Roses.

Stems may be *woody* or *herbaceous,* the former being chiefly characteristic of perennial plants. A woody plant with one main stem at least ten or twelve feet high is called a *tree;* whilst if it branches freely near the ground it is a *shrub,* or if less than three feet high, an *undershrub.*

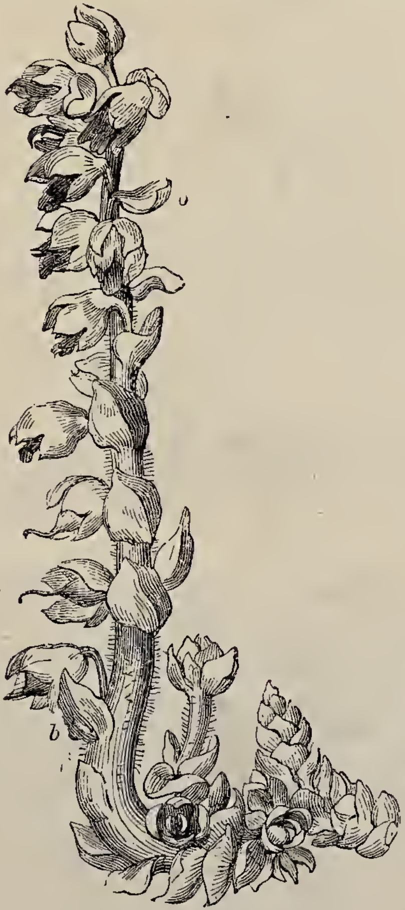
A large number of plants, known as *herbaceous perennials,* have perennial underground stems, but send up branches above ground that are annual, dying down each winter.

Aërial stems may be *erect, prostrate,* or *ascending,* horizontal, that is, at first, but bending upwards at their points. They may be *twining,* as in the Hop,



Common Ivy : *a*, *a*, aërial roots.

Honeysuckle, and Convolvulus, or may climb in other ways, such as the roots in the Ivy, the prickles in Roses, the tendrils in Tares, and the twisted leaf-stalks in Clematis. They may be *spinescent*, ending in straight *spines*, as in the Blackthorn, or they may



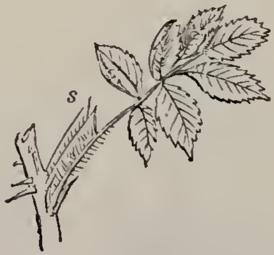
Toothwort with scaly leaves and bracts (*b*).

exceptionally be flattened and *leaf-life*, as in Butcher's-broom (p. 727).

The *runner* is a prostrate axillary branch, rooting at its nodes, and bearing buds which develop into new plants, as in the Strawberry. The *offset* is similar but shorter, and bears only a terminal bud, as in the House-leek (p. 255).

The Leaf is most important as a means of distinguishing closely allied plants. Underground stems and the aërial stems of a few plants, such as the parasitic Toothwort, have small *scaly* or *membranous* leaves; but a typical leaf has a blade, a stalk, and a sheath, or two appendages at its base known as *stipules.* Leaves which have no stalks are termed *sessile* (sitting), as in Eryngo (p. 288).

The stipules may be united round the stem, as in the Knot-grass family, in which, and in the Rose, they occur exceptionally in addition to a sheath.



Leaf of Rose with stipules: *s*, apex of the sheath.

Other characters of the leaves are their vernation (from the Latin, *ver*, spring), or folding in the bud, their position and arrangement, veining, form, base, apex, margin, surface, texture, colour, and duration. In vernation leaves may be *conduplicate*, or folded down the midrib, like the two halves of a sheet of note-paper, as in the Cherry; *plaited*, like a fan, as in the Beech; *convolute*, or rolled up like a scroll, as in the Plum; *involute*, with the margins rolled upwards, as in the Water-lily; *revolute*, with them rolled backward, as in the Dock; *valvate*, when they touch one another without overlapping; or, *imbricate*, where they overlap like roofing-tiles.

In position they are either *radical*, springing directly from an underground stem, as in the Primrose; or *cauline*, produced higher up, on an aërial stem. Both may occur on the same plant, as in Tower Mustard (p. 54).

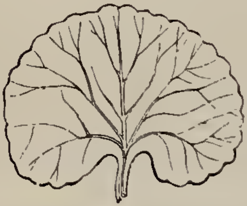
In arrangement leaves may spring singly or *scattered* from the stem, as in Balsam (p. 151); *opposite*, in pairs, as in the Pink (p. 99); or *whorled*, with more than two from one node, as in Herb Paris (p. 745).

The veins of leaves may be *parallel*, as in grasses; or *curved*, as in the Lily-of-the-Valley, with much finer cross-veins; or irregularly *net-veined*, as in the Primrose, of very varying degrees of fineness. They may be *palmate*, radiating from the base of the leaf, as in the Sycamore; or *pinnate*, with cross-veins springing from a midrib, like the barbs of a feather, as in the Beech.

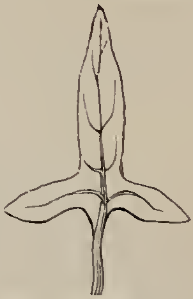
The forms of leaves are very variable, and even on one plant leaves may occur which can only be satisfactorily described by uniting two of the following terms.

They may be *needle-shaped*, as in the Pine; *linear*, with parallel sides and more than four times as long as they are broad, as in the Grasses; *oblong*, with parallel sides but not more than four times as long as broad, as in some Pondweeds; *oval*, with rounded sides, widest across the middle and more than twice as long as broad, as in the Butterwort; *elliptical*, less than twice as long as they are broad, as in the Apple; *round*, as in the Water-lilies and Pennyworts; *lanceolate*, widest near the base and at least four times as long as they are broad; *ovate*, or egg-shaped, widest near the base but little more than twice as long as broad, as in the Pear; *kidney-shaped*, broader than they are long, as in the Ground-Ivy (p. x.); *ob-lanceolate*, or reversedly lance-shaped, as in the Ribwort Plantain (p. 604); *obovate*, or reversedly egg-shaped, as in the Cowslip; *deltoid*, or nearly an equal-sided triangle, as in the Orache; *arrow-shaped*, as in the Arrow-head (p. 768); *halberd-shaped*, with the barbs, or auricles, as they are called, pointing outwards, as in Sheep's Sorrel; or *rhomboid*, as in the Birch.

The base of the blade of the leaf may be *wedge-shaped*; *tapering* downwards, as in the Daisy (p. 372); *heart-shaped*, as in the Violet; *oblique*, or larger on one side than on the other, as in the Lime-tree (p. 138); *decurrent*, when it runs down the sides of the stem as a wing, as in Thistles; *perfoliate* (from the Latin, *per*, through, and *folium*, a leaf), when the auricles are so united round the stem that the stem appears to be growing through the leaf, as in Hare's-ear (p. 295); or *peltate* (from the Latin, *pelta*, a shield), when they are so united in a stalked leaf that the stalk is attached to the leaf near its centre, as in the Pennyworts (pp. 250, 287). When two opposite leaves are united by their bases they are called *connate* (from *con*, together, and *natus*, born), as in the Yellow-wort (p. 489).



Leaf of Ground Ivy.

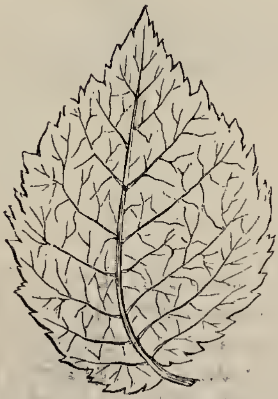


Leaf of Sheep's Sorrel.

The point or apex of a leaf may be *rounded*, as in the Oak; *pointed*; *bristly*; *notched*; or reversedly heart-shaped, as in the leaflets of Wood-Sorrel.

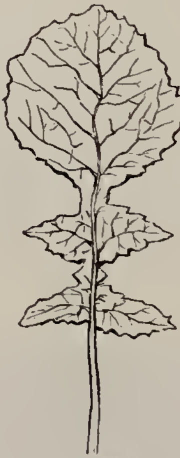
The margin of the leaf is either *entire*, or free from indentations, as in the Lily-of-the-Valley; *fringed* with hairs, as in young Beech leaves; *wavy*, as in the Oak; *crenate*, or scalloped, as in the Violet; *toothed*; or *lobed*. If the teeth point outward it is termed *dentate*, the Holly leaf being *spinously dentate*; if upward, as in the Elm, the leaf is *serrate* or saw-edged.

When a leaf is lobed or divided, its lobes or leaflets are arranged according to its venation, generally palmately or pinnately. The division may extend to various depths from the margin towards the base or midrib, the leaf being termed *simple*, if it does not extend all the way, and *compound*, if it divides the leaf into distinct leaflets. A palmate leaf of three leaflets is called *ternate*, as in Trefoils; one of five, *quinate*, as in Cinquefoil (p. 215). In pinnate leaves it is important to notice whether there is a terminal (odd) leaflet or not; how many pairs of leaflets there are; and if these are again divided up (*bi-pinnate*). If there is a terminal lobe or leaflet larger than the rest, as in the White Mustard, the leaf is called *lyrate*. In describing a compound leaf it is generally only necessary to mention the type on which the leaflets are arranged, whether palmate or pinnate, and to describe one leaflet as if it were a simple leaf. If a leaf be divided up into such fine segments that their arrangement cannot well be determined, as in the


Oblique serrate leaf of the Common Elm.

submerged leaves of the Water Crowfoots, it is called *decompound*.

The same terms are used in describing the surfaces of leaves as for those of herbaceous stems. They may be *glabrous*, or free from hairs; *polished*, as in many Evergreens and Monocotyledons; *glaucous*, with a blue-grey waxy bloom, as in the Sea-kale; *downy*, as in Sage; *hairy*; *prickly*, as in the Teazle; or *glandular*, dotted over with oil-glands, as in St. John's-wort.

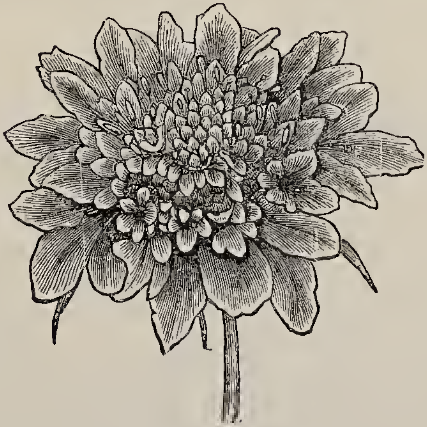


Lyrate leaf of the White Mustard.

In texture leaves may be *leathery*, as Holly, or fleshy, as in House-leek; and in duration they are either *deciduous*, dying and falling in autumn or earlier, or *evergreen*, lasting until a new crop has formed, as in the Ivy, the Pine, and the Yew.

The Hairs on stems or leaves require careful notice, as to whether they are few or many, long or short, stiff or weak, spreading (erect on the surface from which they spring) or *adpressed* (lying flat). The Nettles are the only British plants with stinging hairs.

The Inflorescence is a branch known as the *peduncle* (literally "little foot," and therefore sometimes called foot-stalk), which generally bears modified leaves known as *bracts*, from the axils of which spring secondary branches, which may branch again or bear a flower, the stalk immediately below a flower being termed a *pedicel* or *flower-stalk*. A peduncle springing directly from an underground stem and not bearing foliage-leaves, forms the inflorescence known as a *scape*, which may be one-flowered, as in the Tulip, or many-flowered, as in the Hyacinth, Cowslip, or Primrose. The difference between the two last-named examples is that the Cowslip has a long peduncle and short pedicels; whilst the Primrose has



Head of Scabious.

a very short peduncle buried among its leaves, and long pedicels.

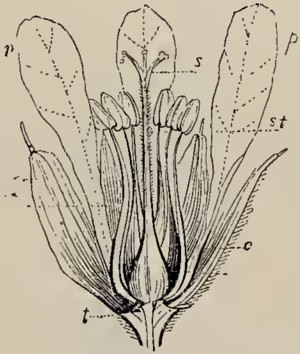
Among other chief varieties of the inflorescence are the following:—The *spike*, an elongated axis with sessile flowers as in the Plantains (p. 604). The *spadix*, a spike with a fleshy axis or peduncle, as in Lords-and-ladies (p. 761). The *catkin*, generally described as a deciduous spike, as in the Hazel and the Willows (p. 676). The *raceme*, an elongated axis with stalked flowers, as in Mignonette (p. 86).

A *corymb*, which only differs from a raceme in the lower pedicels being longer, so as to bring all the flowers nearly to a level, as in the Wallflower. A *head*, in which many small sessile flowers, or *florets*, as they are called, are crowded together on the expanded apex of the peduncle, which is then termed the *common receptacle.* This occurs in the Scabious (p. xiii.) and in all the great order *Compositæ*, the Daisies, Dandelions, Thistles, &c., which Linnæus called "compound flowers." An *umbel*, in which many flower-stalks radiate from a common centre, as in the Ivy (p. 330).

If an inflorescence is branched more than once it is termed *compound.* Thus an ear of Wheat is a *compound spike* or spike of spikelets, and the Carrot, Parsnip, Hemlocks, and most other members of the order *Umbelliferæ* have *compound umbels.*

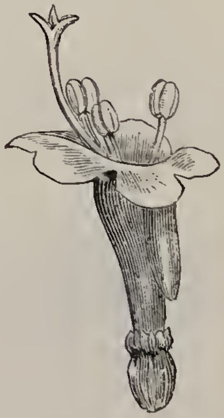
When the terminal or central flower in a cluster opens first the inflorescence is called a *cyme.* Among the various forms of cyme are the *fascicle*, a crowded cluster of nearly sessile flowers, as in the Pinks (p. 99), and the *verticillaster* or false whorl, where two such clusters occur in the axils of opposite leaves, as in the Dead-nettles and other members of the order *Labiatæ* (pp. 565—602).

Bracts are small leaves which are generally to be found below the flower. The inflorescence of the *Cruciferæ* is remarkable for being without any, or *ebracteate.* Sometimes they are mere membranous scales, as in the Cranesbills; or they may be leaf-like, as in the Anemones; or *petaloid*, resembling the petals in colour and texture, as in the Wild Hyacinth. When in one or more whorls below the inflorescence they are called the *involucre* (from the Latin *involucrum*, an envelope). In the Dandelion the involucre consists of two whorls of green bracts, those of the outer whorl reflexed (p. 429). In the Knapweeds the numerous bracts of the involucre are membranous, dark brown, and arranged imbricately, *i.e.*, overlapping like roof-tiles. All *Compositæ* and most *Umbelliferæ* have involucres. An involucre persisting in the fruit stage, like the leafy husk of a Hazel-nut or the "cup" of an Acorn, is termed a *cupule.* This structure gives its name to the order *Cupuliferæ.*



Section of a flower.

The FLOWER is a branch bearing leaves modified so as to assist in the production of seed, and generally crowded together on the expanded apex of the pedicel, or flower-stalk, which is termed the *receptacle* or *thalamus.* As much of the classification of plants is based upon the characters of the flower, a knowledge of its structure is indispensable to the student. A typical flower has four kinds of floral leaves, *sepals, petals, stamens,* and *carpels.* The sepals collectively form the *calyx* (Greek for a cup), and the petals constitute the *corolla* ("little crown"). The calyx and corolla together are called the *perianth* (Greek, *peri-*, round, *anthos,* a flower), or floral envelopes; whilst the stamens and carpels are called the *essential organs,* because seed cannot be formed if they are absent. If both calyx and corolla are present in the same flower, as in the Buttercup, in which flower the five sepals are green and the petals golden, the flower is termed *complete*; but if one of these envelopes is absent, as in the Marsh-marigold, the flower is *incomplete*. *Incomplete flowers* are *monochlamydeous* (Greek, *monos*, one, *chlamys*, a cloak) if, as in this case, they have one envelope; *achlamydeous* if, as in the Ash, they have neither calyx nor corolla. If both stamens and carpels occur in the same flower it is termed *perfect*; if only one class of essential organs is present the flower is *imperfect*, and *staminate* or *carpellate* as the case may be. Plants with imperfect flowers may be either *monœcious* (Greek, *monos*, one, *oikos*, a house), where, as in the Hazel, the staminate and carpellate flowers are on the same plant; or *diœcious*, where, as in Willows and Poplars, they are on different individuals. Where neither stamens nor carpels are present, as in the outer florets of the blue Cornflower, or the outer flowers in the cluster of the Guelder Rose, the flower is *neuter*.

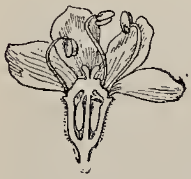


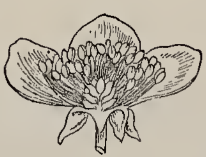
Asymmetric flower of Valerian.

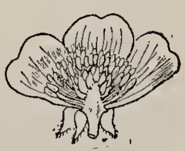
As a rule the leaves of each whorl are alternate with those of the preceding whorl, the petals being opposite the spaces between the sepals and the outer row of stamens opposite the spaces between the petals. The Primrose and its allies form a marked exception to this rule in that its stamens are opposite to, or stand in front of, its petals.

Where the floral leaves in each whorl are similar in size and shape the flower can be divided symmetrically in several directions, as in the Buttercup; and it is then called *polysymmetric*. Where from differences in the form of the leaves it can only be so divided in one direction, as in the Pea, the flower is *monosymmetric*. Occasionally it is *asymmetric*, or not symmetrically divisible by any plane, as in Valerian.

The RECEPTACLE is a very important structure in the classification of flowering plants, as upon it what is called the *insertion* of the floral leaves depends. Thus if sepals, petals, stamens, and carpels spring one beneath the other from a more or less conical receptacle, as in the Buttercup, the calyx is *inferior*, the corolla and stamens are *hypogynous* (Greek, *hupo*, under, *gune*, a woman), the carpels are *superior*, and the flower as a whole is called *thalamifloral*. If, as in the Bramble or the Strawberry, the calyx, corolla, and stamens are carried out from under the carpels by a horizontal disk-like extension of the receptacle, the calyx is still inferior and the carpels superior, but the petals and stamens are termed *perigynous*. So, too, if, as in the Plum or the Rose, the sepals, petals, and stamens are carried up on a tube-like expansion of the receptacle which does not adhere to the sides of


Flower of Cow-parsnip, showing epigynous insertion.


Flower of Bramble, showing perigynous insertion.

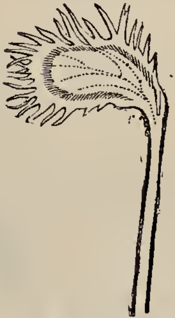

Flower of Buttercup in section, showing hypogynous insertion.

10c

the carpels. If, as in the Apple, the Pear, and the Hawthorn, this receptacular tube does adhere to the sides of the carpels, the calyx becomes *superior* and the ovary formed by the carpels *inferior*, the petals and stamens being still *perigynous*. If, lastly, as in *Compositæ* and *Umbelliferæ*, this adherent tube carries the sepals, petals, and stamens on to the top of the ovary, the calyx is superior, the ovary inferior, and the petals and stamens *epigynous* (Greek, *epi*, upon). When the petals and stamens are perigynous or epigynous the flower is sometimes called *calycifloral*, as if these parts sprang from the calyx.

The CALYX (from the Greek, *kalux*, a cup) is usually green and leaf-like, though it may be *petaloid*, as in the Marsh-marigold. Its sepals may be free (*polysepalous*) or united (*gamosepalous*), like a cup. In all hypogynous flowers it will be, as we have seen, *inferior*, and in all epigynous ones, *superior*. In direction the sepals may be *erect*, as in the Cabbages; *ascending*, as in Mustard; *spreading*, as in Strawberry; or *reflexed*, as in the bulbous Buttercup. At their base they may be *pouched*, as in the two outer ones of most *Cruciferæ*. or they may be *spurred*, as is one of those of the Larkspur. Even when made up of five united sepals, the calyx is often *bi-labiate* or two-lipped, as in the Broom and the Sage. It may be *tubular*, as in Centaury; tubular and *plaited*, as in Primrose, folded so as to be star-shaped, if cut across; *bell-shaped*, as in Henbane; barrel-shaped, or *urceolate*, and *inflated*, or separated by some considerable space from the corolla within it, as in the Bladder-campion; or *cylindric*, as in the Carnation. In some *Compositæ* and other flowers the calyx is replaced by a circle of hairs called a *pappus*, which often enlarges in the fruit stage, as in Thistle-down. In duration the calyx may be *caducous*, falling off as the flower opens, as in Poppies; *deciduous*, falling with the petals and stamens when the seed is set, as in the Cherry; or *persistent*, remaining in the fruit stage, as in the Strawberry. When persistent it is generally *marcescent* or withered, as in the Hawthorn, Apple, Medlar, and Gooseberry.

The Corolla ("little crown") is the ring of more delicate, or *petaloid*, leaves within the calyx, which are usually coloured—that is, not green—and often fragrant. They are also usually attached by a narrower base than the sepals, this being sometimes drawn out into a long narrow portion or *claw*, as in the Pinks, when the broader upper part is distinguished as the *limb*. If coherent the petals are *gamopetalous* and the united part forms the *corolla-tube*, the junction of the tube with the free limb being known as the *throat*. In the Borage tribe the throat of the corolla is generally furnished with little scales or swellings. If not coherent the petals are *polypetalous*, and this is a discriminating character of great importance in the classification of Dicotyledons, as also is their insertion, whether *hypogynous*, *perigynous*, or *epigynous*, and, to a less extent, their symmetry. Of polypetalous types the most important are the *cruciform*, consisting of four petals placed crosswise, as in the *Cruciferæ* (p. xx), and the *papilionaceous* (Latin, *papilio*, a butterfly) characteristic of the Pea



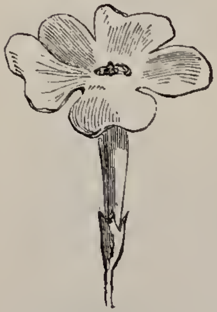
Clawed petal of a Pink.

and Bean tribe, in which there are five petals, the posterior one—that nearest the stem—called the *standard* and usually the largest, the two side ones termed *wings*, and the two lower or anterior ones, often slightly united, known as the *keel* (p. 163).

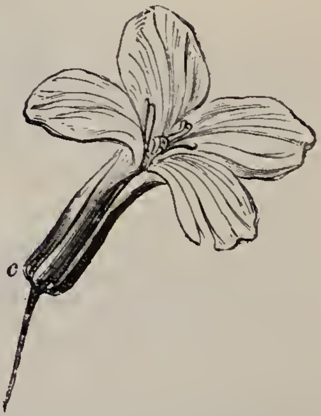
Among gamopetalous corollas the chief polysymmetric forms are ;—

Tubular, narrow, as if formed by united erect petals, as in the florets of Thistles or the disk-florets of a Daisy.

Bell-shaped, wider, as in Campanula (p. 443).



Salver-shaped corolla of Primrose.



Cruciate corolla : *c*, gibbous calyx.

Urceolate, or barrel-shaped, as in Heaths (p. 454).

Funnel-shaped, as in the Small Field Convolvulus.

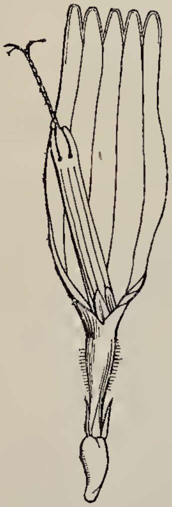
Trumpet-shaped, with reflexed margin, as in the Large White Convolvulus.

Salver-shaped, with long tube and limb at right angles to it, as in Primrose.

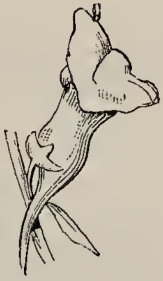
Rotate, or wheel-shaped, with a short tube, as in Pimpernel, Forget-me-not, and Elder.

The chief monosymmetric gamopetalous types are the *bi-labiate*, or two-lipped, and the *ligulate*, or strap-shaped. The bi-labiate may be either *ringent*, or gaping, as in the Natural Order *Labiatæ;* or *personate* (from *persóna*, a mask), as in Toad-flax. The *ligulate* occurs in all the florets of the sub-order *Liguliforæ* in the order *Compositæ*, as in the Dandelion and Chicory, and in the outer or ray florets of many other *Compositæ*, such as the Daisy.

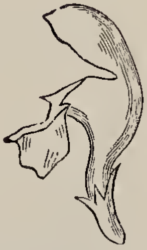
In some cases, such as the Flaxes, the corolla is *fugacious*, falling off directly it is gathered; and in a few others, as in *Campanula*, it is *persistent*, remaining in a withered condition round the fruit.



Ray-floret of Composite showing ligulate corolla and syngenesious anthers.



Personate carolla of Toad-flax.



Ringent corolla of Dead-nettle.

The *æstivation* (Latin, *æstívus*, belonging to summer), or folding of the leaves of the flower in the bud, is often characteristic of Natural Orders or other large groups. In *Clematis* the sepals are *valvate*, touching at their edges without overlapping; in all other *Ranunculaceæ* they are *imbricate*, overlapping like tiles on a roof. Poppies have their

vernation
[illegible]

petals *crumpled.* The *Malvaceæ* have their sepals valvate and their petals *convolute,* with one edge towards the centre of the flower, and the other rolled round the next petal. In *Convolulus* the coherent petals are convolute and twisted upwards, or *contorted.*

The STAMENS usually consist of one, two, or more whorls of thread-like stalks known as *filaments,* each surmounted by an oblong or rounded body, generally two-lobed externally and two-chambered within, which is called the *anther,* and contains the *pollen,* a fine dust-like substance. When mature the anther bursts and discharges the pollen, which is the active agent in "setting" or fertilising the seed. The number of stamens varies from one to an indefinite number, but is very commonly either the same as that of the petals or twice as many. They may be equal or unequal in length; but if, as in most *Labiatæ* and *Scrophulariaceæ,* there are four stamens, two long and two short, they are termed *didynamous* (Greek, *dis,* two, *dúnamis,* strength); and if, as in the *Cruciferæ,* there are six stamens, four longer than the other two, they are termed *tetradynamous.* The stamens may be free or united, and in the latter case they may all be united into a tube below, as in the *Malvaceæ,* when they are termed *monadélphous* (Greek, *monos,* one, *adélphos,* a brother); or they may be united in several groups or *polyadélphous,* as in the St. John's-worts (p. 128); or they might be united by their anthers only, as in the *Compositæ,* when they are called *syngenésious* (Greek, *sun,* together, *genesis,* beginning). In insertion they may be hypogynous, perigynous, epigynous, or, when united to the petals, as in the Primrose, *epipetalous.* In the *Orchideæ* (p. 687), the stamens are united with the carpels in a central column, and are then termed *gynandrous.*

The filament may be *filiform* or thread-like; *capillary,* or so slender as to bend under the weight of the anther, as in Grasses; *subulate,* or awl-shaped, as in the Tulip; *petaloid* or broad, as in the Water-lilies; or absent, when the anther is termed *sessile*, as in Lilac.

Though generally yellow, the anther is violet in many Grasses and black in Poppies; and among its chief variations in form are the divergent ends of its two lobes in Grasses (p. 826). Its attachment to the filament is often an important character. It may be *basifixed*, or attached only at its base; *dorsifixed*, or attached along its whole length; or *versatile*, so attached by a point that it can be freely turned round, as in Lilies and Grasses. It generally splits longitudinally when mature; but less commonly it does so transversely; in the Heath tribe by terminal pores; and in the Barberry (p. 28) by valves. Whilst in the *Compositæ* and *Amaryllidaceæ* it bursts inwards, towards the centre of the blossom, or is, as it is called, *introrse*; in *Iridaceæ* and the Barberry it is *extrorse*, discharging its pollen outwards.

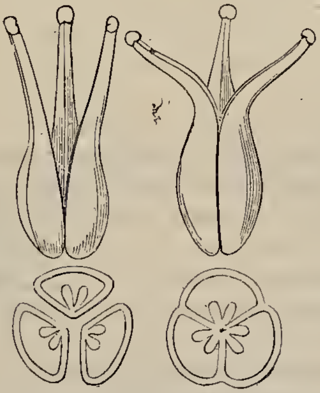


Diagram of apocarpous and syncarpous carpels with cross sections of their ovaries.

The CARPELS occupy the centre of the flower. There may be only one, as in the *Leguminosæ* and *Pruneæ* (p.199), or more than one, and in the latter case they may be free from one another, or *apocarpous*, as in the *Ranunculaceæ*, or united (*syncarpous*), as in *Liliaceæ*. In either case the lower part forms one or more chambers, containing the ovules or unfertilised seeds, which chambers, if distinct, are termed *ovaries* ; if united, a syncarpous ovary, which may be one-chambered, as in Violets and Orchids, or have two, three, or more chambers, generally as many as there are carpels. Above the ovary there is generally one or more shaft-like tubes called *styles*. Each apocarpous carpel will generally have a separate style, as in the Strawberry or the Bramble; but a syncarpous ovary, such as that of the Violet or the Lily, may have only one. Sometimes, as in the Daisy and the Iris, the style may fork at its upper end and it bears the *stigma*, a variously-shaped, sticky surface to which the grains of pollen adhere when dropped on to it, or carried thither by wind or insects. Besides noting whether the ovary is apocarpous or syncarpous, its external form, and the number of chambers into which it may be divided internally, it is important to determine whether it is *superior*, free, that is, from the calyx, or *inferior*, that is, adherent to the calyx-tube, and also how many ovules there are in each chamber, and how they are arranged. This arrangement is termed *placentation*, because the ovules commonly spring from a spongy cushion-like portion of the inner wall of the ovary called a *placenta*. As the solitary ovule in the *Polygonaceæ*, in the Walnut and in the Gymnospermous[1] Yew appears to be a direct prolongation of the branch or axis, it is called *terminal*. That of the *Compositæ*, though rising from the base of the ovary and, therefore, termed *basal*, is lateral to the axis ; whilst in the *Primulaceæ* and in the *Caryophyllaceæ* several ovules springing from a central axis in a one-chambered ovary, they are called *free-central*. In Water-lilies, Poppies, and the Flowering-rush (*Bútomus*) the

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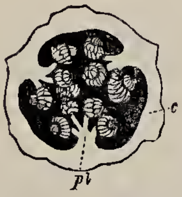
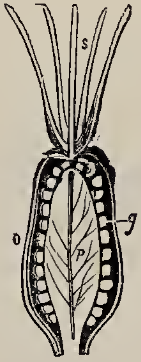
(1) Naked-seeded. (See p. xxvii.)

placentation is *superficial*, the ovules being scattered over the inner walls of the ovary. Most one-chambered ovaries which contain many ovules, such as that of the Violets, have lines of ovules down their sides, corresponding to the number of carpels. This is called *parietal* placentation (Latin, *paries*, a wall). The *Cruciferæ* are exceptional in having parietal placentation in a two-chambered ovary, a partition (known as a *replum*) growing across between the two placentas (p. 44). Most many-chambered ovaries have *central placentation*, as, for example, in the Lilies or St. John's-worts, in which the rows of ovules spring from the central axis formed by the inrolled margins of the united carpels.



Parietal placentation.



Free-central placentation.

The Fruit is the ovary and other adherent parts that enlarge after the fertilisation of the ovules. It may be succulent or dry. In the latter case, if one-seeded, it will generally be *indehiscent*, not splitting, that is, when ripe; but if many-seeded it will commonly split, either into pieces known as *nutlets*, each enclosing one or two seeds, or so as to disclose its seeds. Our chief types of fruit may be thus classified:—

Of one carpel (*monocarpellary*)—

1. *Pod*, or legume, dry and splitting down both sides, as in the *Leguminosæ*.

2. *Drupe*, or stone-fruit, with a skin, flesh, and stone, the kernel being the seed, as in the tribe *Prúneæ* of the *Rosaceæ*.

Of more than one carpel (*polycarpellary*)—

Apocarpous (carpels distinct).

3. *Etærio* (Greek, *hĕtaíros*, a companion), a collection of carpels (*fruitlets*), each of which may be dry, one-seeded and indehiscent, when it is called an *achene* (Greek, *a*, not; *chaíno*, I split), as in the Buttercup, Strawberry, and Rose; or each may be a dry many-seeded pod or *follicle*, splitting down one side, as in the Marsh-marigold and the Columbine; or each may be a succulent miniature drupe or *drupél*, as in the Blackberry and Raspberry.

Syncarpous (carpels united).

Superior.

4. *Caryopsis*, dry, indehiscent, and one-seeded, as in Wheat and most Grasses, each grain being a fruit formed of two carpels with a groove where they join.

5. *Siliqua*, the dry, two-chambered dehiscent pod of the *Cruciferæ* (p. 44).

6. *Regma*, dry, splitting into nutlets, as in Mallows, Cranesbills, Spurges, Mint, Borage, &c.

7. *Samara*, dry and winged, as in the Ash, Maple, and Elm.

8. *Capsule*, dry and dehiscent, as in the Violets, Primrose, Pinks, &c., opening by *valves* in the Violets, by *teeth* in the Primrose, by *pores* in the Poppy, and by splitting all round in the Pimpernels.

Inferior.

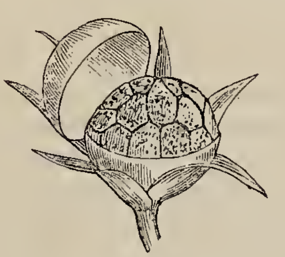
9. *Cypsĕla* (Greek, *kúpsĕlē*, a chest), dry, one-seeded, and indehiscent, as in the *Compositæ*, and often surmounted by a downy pappus, as in Thistle-down.

10. *Nut*, very similar, but generally larger and harder, as in the Beech, Acorn, or Hazel.

11. *Cremocarp*, dry and splitting into two nutlets, as in the *Umbelliferæ* (p. 279).

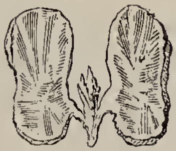
12. *Berry*, succulent, as in the Gooseberry.

13. *Pome*, succulent, with a tough core, as in the Apple, Hawthorn, Mountain Ash, and other members of the sub-order *Pomaceæ* of the *Rosaceæ*.



Capsule of Pimpernel.

The Seeds are only naked in such plants as the Yew and the Firs, which are, therefore, called *Gymnospermia* (naked-seeded). In other flowering plants they are enclosed in the fruit, and if the fruit is indehiscent they have commonly a brown bitter outer skin. The seeds of dehiscent fruits are more often conspicuously coloured as in the Spindle-tree (p. 156); and they are sometimes, as in the Willows, Poplars, Willow-herbs, &c., furnished with tufts of hair, which aid in their dispersal by wind. The most important distinction among seeds for purposes of classification is into *dicotylédonous*, having two opposite lobes or seed-leaves (*cotylédons*) with the primary bud between them, and *mŏnŏcotylédonous*, with only one such cotylédon.



Dicotyledonous seed.

Other terms which are employed in the body of the work will be explained as they occur, or in the glossary at the end of the volume.

PART II.

THE CLASSIFICATION OF PLANTS.

So great is the number of different kinds, or *species*, of plants that no one could possibly bear them all in mind or recollect their distinctive characteristics. Whilst in 1753, when the great Swedish botanist Linnæus published his "Species Plantarum," only 7,300 species were known to him, botanists at the present day have upwards of 100,000 species to deal with, of Flowering Plants alone. It becomes necessary, therefore, to classify them in a succession of larger or more general groups, according as they agree with one another in many or in fewer characters. We can then more readily remember the characters of the comparatively few larger groups; and, knowing them, can on examination refer any plant to its position in the classification.

Plants which agree in all essential points, though differing perhaps in size or in the colour of their flowers, are said to belong to a single *species*. Naturalists of all schools of thought agree that the individuals of a species have all had a common ancestry. Each species has a Latin or scientific name, which since the time of Linnæus[1] has consisted of two words, the second of which is peculiar to it and is known as the *specific* name, whilst the first is known as the *generic* name, being shared with other species,

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(1) No little merit is due to Linnæus for inventing the specific name of plants. The method in use previously was to attach to every plant some such title as the following:—*Gramen xerampelinum, miliacea, pertenui ramosaque sparsâ panicula.* The name of this grass Linnæus expressed with precision and simplicity by the two words, *Poa bulbosa.*

which, agreeing in certain characters, are said to belong to the same *genus.* The wild Sweet-scented Violet, for example, is called by botanists *Víola odoráta,* the name *Víola* indicating that it belongs to the genus so called. Besides the Scented Violet, we have wild in England the Marsh Violet, the Hairy Violet, the Wood Violets, the Dog Violet, the Pansy, and several others, all belonging to the same genus, and, therefore, described under the name *Víola.* But the Marsh Violet differs from the Sweet-scented in having broader and blunter leaves, in being almost entirely free from hairs, and in having smaller, pale lilac, scentless flowers, with a shorter spur to the corolla, besides growing in much wetter situations. The Marsh Violet is, therefore, a distinct species, *Viola palústris.*

It is by no means easy to determine what characters are sufficiently constant, true to seed, and important to constitute a species. Among the Wood Violets, for instance, we may find that most have broad-pointed leaves, broad blue petals with numerous branched dark veins at their base, and a thick yellowish-white spur; but that some have the leaves drawn out into a longer point, the petals narrower and more lilac, with few slightly-branched veins, and a compressed dark-bluish spur. Some botanists consider these two forms as distinct species, *V. Riviniána* and *V. silvéstris,* whilst others call them both varieties of *V. silvéstris,* the first being then known as *V. silvéstris,* var. *Riviniána,* and the second as *V. silvéstris,* var. *Reichenbachiána,* "var." being the abbreviation of the Latin "varietas.".

On the leaf-stalk of a Sweet-scented Violet or of a Wood Violet we shall find two small narrow stipules; but in the Pansy we shall see that these are replaced by a pair that are large, leafy, and pinnately-lobed. This is only one of the characters that make us separate the Pansy as a distinct species, *V. tricolor.*

Sweet Violets, Wood Violets, Pansies, and in fact all other Violets, though thus differing specifically, agree in having monosymmetric flowers with ear-like lobes (auricles) at the base of each of their five sepals, a spur to the posterior petal, and five united anthers with tail-like appendages from the base of two of them. These then are the generic characters of the genus *Viola*. According to the theory of descent, all the species in a genus are descended from a common ancestry, but from a common ancestry more remote than that common to the individuals constituting a species. In grouping species in one genus all the characters of the plants have to be taken into consideration, and we shall commonly find that all the species of any one genus will agree in the number and insertion of their floral leaves, the kind of fruit, and the general type of leaf; but that the species will differ from one another in the size and form of the various parts. The mere colour of petals or of fruit is generally considered only as a varietal character. So far as a classification does take all the characters of plants into account, it is a *natural system*; whilst one based only upon a single set of characters is an *artificial system*.

The best of all artificial systems is that of Linnæus, based primarily upon the number and arrangement of the stamens, and secondarily upon the carpels. Like all other artificial systems, this is a mere index, telling nothing about a plant beyond the one character considered, separating plants obviously allied, and placing together others which have but one character in common. Linnæus himself recognised the tentative character of his system. "All plants," he says, in his "Philosophia Botanica," "are allied by affinities, just as territories come in contact with each other on a map. Botanists should unceasingly endeavour to arrive at a natural system of classification. Such a natural system is the final aim of botanical science.

Our insufficient knowledge of plants is what renders such a system impracticable at present."

Botanists nowadays seldom employ the Linnæan System, preferring the more difficult but more instructive *Natural System*. In this we may reverently be said to be thinking out for ourselves the thoughts of the Creator, for, according to the theory of descent, which gives us the most rational explanation of the meaning of resemblances, we are reconstructing the pedigree of the Vegetable Kingdom.

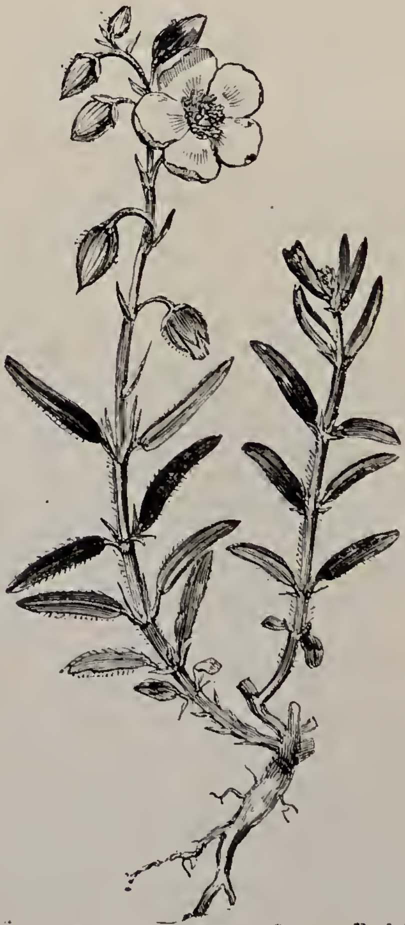
One of the most striking assurances that our system is truly natural is afforded us by the discovery that many groups of genera classed together in what we term *natural orders*, solely on account of structural characters, agree closely also in their properties. This obviously also gives a practical utility to the system. In the present work, for instance, adopting a system based upon those of Antoine Laurent de Jussieu (1774) and Auguste Pyrame de Candolle (1813), we group the genera into *natural orders*, the Latin names of which are adjectival, ending in *æ*, agreeing with the word *plantæ* understood. The name of the first of these orders, *Ranunculaceæ*, means "plants allied to *Ranunculus*," and the order includes, in addition to the Buttercups (*Ranunculus*), Anemones, Hellebores, Aconites, Larkspurs, Columbines, Pæonies, Clematis, and others. These agree in the absence of any union between the parts of their flowers and in having hypogynous and generally numerous stamens; but they also agree in having an acrid, often poisonous, juice. Another large Natural Order, the *Cruciferæ*, consists almost exclusively of herbaceous plants with simple leaves, flowers without bracts, four sepals, four petals, six stamens, of which four are longer than the other two, and two united carpels forming a siliqua; but they also agree in being wholesome and generally pungent from the presence of oil of mustard. Yet another group, the *Labiatæ*, agree in their square stems, opposite and decussate, simple leaves, two-lipped (*bi-labiate*) corollas, four stamens, two long and two short, and two carpels dividing into four nutlets; but they also agree in being aromatic from the presence of volatile essential oils in which are dissolved camphor-like substances. The structure of a newly-discovered plant may thus afford a traveller considerable information as to its probable properties.

The Vegetable Kingdom is now generally divided into four sub-kingdoms: the Thallophyta, including seaweeds and fungi; the Bryophyta, or mosses and liverworts; the Pteridophyta, or ferns, horsetails, and clubmosses; and the Phanerogamia, or Spermaphyta, the flowering, seed-bearing plants. Of these only the last comes within the scope of the present work. It is divided into two divisions, very unequal in the number of species belonging to them: the *Angiosperms*, or fruit-bearing plants, which have their ovules enclosed in closed ovaries with a viscid stigma to receive the pollen; and the *Gymnosperms*, including the cone-bearing trees, which have naked seeds and no stigmas, the pollen falling directly upon the ovule. The Angiosperms, the larger division, is subdivided into two classes, the *Dicotyledons* and the *Monocotyledons*. The characters of these classes, and of the sub-classes, series, and orders into which they are divided, are fully given in the body of the work.

PART III.

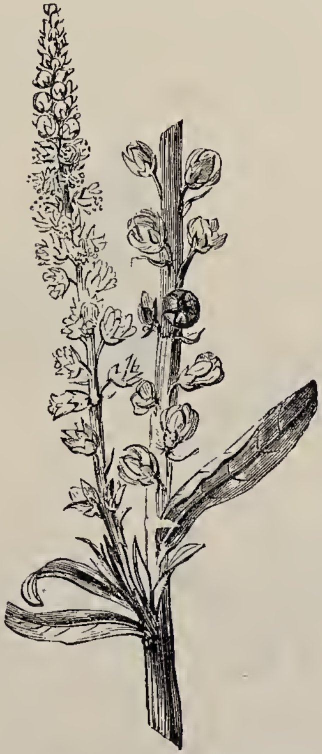
THE IDENTIFICATION OF PLANTS.

A FEW words may be of use here as to the way to employ the body of the book when we wish to find out the name of any flowering plant we may have met with in our walks. Suppose we have found on some chalk-down a small wiry undershrub with opposite, entire leaves and conspicuous yellow flowers, in what part of this work must we look for its name and description? Even if we cannot detect the netted veins in the leaves, the five petals make us suspect the plant to be a Dicotyledon. There is a calyx of three larger and two minute sepals below the petals and these last are not united; so that it almost certainly belongs to the sub-class Polypetalæ, as we see by the Tabular View of the Natural Orders on pp. xxxviii—lii. Not only is the ovary distinctly above both calyx and corolla, or "superior," but the numerous stamens clearly spring from beneath it, and are, therefore, "hypogynous." The plant belongs then to the series Thalamifloræ. An examination and dissection of the ovary, or, more easily, of the capsular fruit, shows a number of ovules or seeds springing in three rows from the sides of a one-chambered ovary. It is, therefore, almost certainly "syncarpous," and for that reason does not belong to Orders 1 or 2. The leaves at once tell us that it can hardly belong to Orders 3, 4, 5, 6, or 7 in the Tabular View; but all its characters agree with those of Order 8, the *Cistíneæ*, or Rock-Rose Family, so we turn to the fuller description of this group at p. 87, to which we are referred in the Tabular View, before looking elsewhere. There we find that there is but one British genus in the Order, viz., *Heliánthemum*, and that, of the four truly British species, only one, *H. Chamæcístus*, is at all common. The prostrate growth, small stipules, and green upper surfaces of its leaves at once show us that it is to this species, the Common Rock-Rose, that our specimen belongs.



HELIÁNTHEMUM CHAMÆCISTUS (*Common Rock-Rose*).

We may find a second example to test at no great distance. It is an erect, herbaceous plant with smooth leaves and long racemes of green flowers. Here again the veins and stipules of the leaves and the four sepals and petals, though the latter are so cut up as to be difficult to count, suggest a Dicotyledon. The numerous stamens spring from a relatively large, fleshy outgrowth or "disk," which is hypogynous, but by its one-sided development renders the flower monosymmetric The ovary is distinctly superior, springing from the top of this disk and is three-sided externally and one-chambered, and con



RESÉDA LUTÉOLA (*Dyer's Rocket*).

tains three lateral rows of ovules. These characters make us again turn to the Polypetalæ and, among them, to the Thalamifloræ. We soon see that the ovary does not agree with those described in the Tabular View under Orders 1—4, or, for that matter, 5 or 6, whilst the numerous stamens at once make us pass over these last two Orders and pause at Order 7, the *Resedáceæ* or Mignonette Family. Turning to the fuller description of this group on p. 85, we again find but one British genus, *Reséda,* containing two wild species. The undivided leaves and four sepals of the plant before us enable us to decide between these two. It is *R. Lutéola,* the Weld or Dyer's Rocket.

COCHLEÁRIA DÁNICA (*Danish Scurvy-grass*).

One more example will suffice. The plant to be examined is a small annual herb growing near the sea or in the marshes bordering some tidal river. Its leaves are rather fleshy and have no stipules, the lower ones are heart-shaped, and the upper ones, which have short petioles, are deltoid or angular. The white flowers with four distinct green sepals, four white petals and six stamens, of which four are longer than the other two (tetradynamous), after referring us, as before, in succession to Dicotyledons, to Polypetalæ, and to Thalamifloræ, cause us, in running through the characters of the orders, to pause at Order 6, the *Crucíferæ* or Cabbage Family. This is a large order containing more than twenty-five genera, so we have to turn to the table of these genera on pp. 44—47. We may have some little difficulty here; but, if we find any fruit on our specimen, the short pod which is not flattened but inflated, and contains a number of seeds, and the unnotched petals suggest the genus *Cochleária*, the Scurvy-grass. On turning to the description of this genus on p. 69 we find that it includes three or four British species; but that, among these, the stalked deltoid leaves and egg-shaped pod show our specimen to be *C. dánica*, the Danish Scurvy-grass.

By puzzling out every plant he meets with in this manner the student fixes their distinctive structural characters in his mind, and acquires a far more valuable knowledge of plants than he would get by being told their names, by identifying them from pictures, or by any artificial key.

TABULAR VIEW OF THE NATURAL ORDERS.

Sub-kingdom. *Spérmaphytes* or *Phánerogams.*—Plants producing flowers and seed.

Division I. *Angiosperms.*—Plants having their ovules in closed ovaries.

Class I. *Dicotylédons.*—Plants having two cotyledons,[1] net-veined leaves and floral leaves in whorls of 5, 4, or 2. (pp. 1—682.)

Sub-Class 1. *Polypétalæ.*—Having both calyx and corolla, and the petals of the latter free.[2] (pp. 2—333.)

Series 1. *Thalamiflóræ.*—Petals and stamens hypogynous; ovary superior.[3] (pp. 2—154.)

§ Ovary apocarpous.

Order 1. *Ranunculáceæ* (The Buttercup Family).—Except *Clématis*, herbs with watery, generally acrid juice; scattered leaves; sepals 3 or more; petals usually 5; stamens usually indefinite; fruit of achenes or follicles; with no cohesions in the flower. (p. 2.)

Order 2. *Berberídeæ* (The Barberry Family).—Shrubs with scattered leaves; polysymmetric flowers; sepals 6—9; petals 6; stamens 6; opening by valves; fruit berry-like. (p. 28.)

(1) Almost every character is in nature subject to exceptions; thus the Oak has often three cotyledons, the Dodder hardly a vestige of any.

(2) Flowers without corolla occur in Ranunculáceæ, Crucíferæ, Violáceæ, Caryophylláceæ, Rosáceæ, Saxifrágeæ, Halorágeæ, Lythráceæ, Onagráceæ. Petals more or less coherent occur in Fumariáceæ, Polygaláceæ, Portuláceæ, Tamaricíneæ, Malváceæ, Ilicíneæ, Crassuláceæ, and Cucurbitáceæ.

(3) Stamens apparently springing from a perigynous disk in *Castalia* (Nymphæáceæ).

§§ Ovary syncarpous; carpels many; ovules many.

Order 3. *Nymphæáceæ* (The Water-lily Family).—Water-plants with floating leaves; solitary, large polysymmetric flowers; petals many, gradually passing into stamens; stamens indefinite; carpels enclosed in cup-like disk; ovules superficial. (p. 30.)

Order 4. *Papaveráceæ* (The Poppy Family).—Herbs with milky juice; scattered leaves; conspicuous polysymmetric flowers; sepals 2, caducous; petals 4; stamens indefinite; ovules superficial or parietal; fruit capsular. (p. 33.)

§§§ Ovary syncarpous, 1—2 chambered; carpels 2—5; ovules parietal.

Order 5. *Fumariáceæ* (The Fumitory Family).—Herbs with watery juice; divided leaves; flowers in bracteate racemes, monosymmetric; sepals 2; petals 4, the inner pair coherent; stamens 4, diadelphous; carpels 2; ovary one-chambered. (p. 40.)

Order 6. *Crucíferæ* (The Cabbage Family).—Herbs, often pungent, with scattered, exstipulate, simple leaves; flowers in ebracteate racemes, polysymmetric; sepals 4; petals 4; stamens 6, tetradynamous; carpels 2; ovary two-chambered; fruit a siliqua. (p. 43.)

Order 7. *Resedáceæ* (The Mignonette Family).—Herbs, with scattered, exstipulate leaves; flowers greenish, in bracteate racemes, monosymmetric; sepals 4—7, persistent; petals 4—7; stamens indefinite; carpels 3; ovary one-chambered. (p. 85.)

Order 8. *Cistíneæ* (The Rock-Rose Family).—Undershrubs with entire, opposite leaves; conspicuous polysymmetric flowers; sepals 3—5; petals 5; stamens indefinite; carpels 3; ovary one-chambered. (p. 87.)

Order 9. *Violáceæ* (The Violet Family.)—Herbs with scattered, stipulate, simple leaves; flowers monosymmetric; sepals 5; petals 5, 1-spurred; sta mens 5; carpels 3; ovary one-chambered; ovules many. (p. 89.)

ORDER 10. *Polygaláceæ* (The Milkwort Family).—Herbs with scattered, exstipulate, simple leaves; flowers in racemes, monosymmetric; sepals 5, the inner ones petaloid; petals 3—5; stamens 8, diadelphous; carpels 2; ovary two-chambered; ovules 2. (p. 93.)

ORDER 11. *Frankeniáceæ* (The Sea-heath).—A herb with opposite, exstipulate leaves; small, axillary, polysymmetric flowers; sepals, petals, and stamens 4—6 each; carpels 2—5; ovary one-chambered. (p. 96.)

§§§§ Ovary syncarpous, one-chambered; carpels 2—5; placenta free-central or basal.

ORDER 12. *Caryophylláceæ* (The Pink Family).—Herbs, mostly with swollen nodes; opposite, simple leaves; flowers polysymmetric, white or red; sepals 4—5; petals 4—5; stamens 8—10; styles 2—5; ovules many; placentation free-central; fruit a capsule, opening by teeth or pores. (p. 96.)

ORDER 13. *Portuláceæ* (The Purslane Family).—Smooth, succulent herbs with exstipulate, simple, entire leaves, opposite or alternate; small flowers; sepals 2; petals 5; stamens 3—5; ovules few, basal. (p. 123.)

ORDER 14. *Tamariscíneæ* (The Tamarisk).—A shrub with minute leaves and lateral spikes of small flowers; sepals and petals 4—5 each; stamens 4—10, on a disk; styles 3; ovules many, basal. (p. 125.)

§§§§§ Ovary syncarpous, two- or more-chambered; placentas axile.

ORDER 15. *Elatíneæ* (The Waterwort Family).—Small aquatic herbs with opposite, stipulate, spathulate leaves and minute axillary flowers; sepals, petals, stamens, and carpels 2—5 each; ovules many. (p. 127.)

ORDER 16. *Hypericíneæ* (The St. John's-wort Family).—Herbs or shrubs with opposite, simple leaves, often dotted with glands, and conspicuous yellow polysymmetric flowers, generally in cymes; sepals 5; petals 5; stamens polyadelphous; carpels 3—5; ovules many. (p. 128.)

ORDER 17. *Malváceæ* (The Mallow Family).—Herbs or shrubs with mucilaginous juice, scattered, stipulate leaves, and conspicuous polysymmetric flowers; sepals 5, valvate; petals 5, convolute; stamens monadelphous; carpels many, each 1-ovuled. (p. 132.)

ORDER 18. *Tiliáceæ* (The Linden Family).—Trees with scattered, stipulate, oblique, serrate leaves, a large bract adherent to the flower-stalk, and clusters of greenish polysymmetric flowers; sepals 5; petals 5; stamens many; carpels 5, each 2-ovuled. (p. 137.)

ORDER 19. *Líneæ* (The Flax Family).—Herbs with slender stems; narrow, simple, entire, exstipulate leaves and polysymmetric flowers; sepals, petals, stamens, and carpels 4—5 each; petals fugacious; carpels 2-ovuled. (p. 139.)

ORDER 20. *Geraniáceæ* (The Crane's-bill Family).—Herbs, often succulent, with leaves generally stipulate; and conspicuous polysymmetric or monosymmetric flowers; sepals 3—5; petals 3—5; stamens 5—10; carpels 3—5; ovules 1 or more in each chamber. (p. 142.)

ORDER 21. *Ilicíneæ* (The Holly).—A tree with evergreen spinous leaves and small white flowers; sepals, petals, stamens, and carpels 4—5 each; fruit berry-like, with 4 one-seeded stones. (p. 152.)

SERIES 2. *Calycifloræ.*—Petals and stamens perigynous or epigynous; ovary superior or inferior.[1] (pp. 154—333.)

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(1) The stamens are sometimes indistinctly perigynous in Leguminósæ, Saxifrágeæ, Crassuláceæ, and Droseráceæ.

§ Stamens perigynous; ovary generally superior.[1]

ORDER 22. *Celastríneæ* (The Spindle-tree).—A shrub or tree, glabrous; with opposite leaves; small greenish flowers; pink, fleshy capsules; and orange seeds; sepals, petals, stamens, carpels, and seeds usually 4 each. (p. 155.)

ORDER 23. *Rhámneæ* (The Buckthorn Family).—Shrubs with simple leaves, small, greenish flowers, and berry-like fruit; sepals, petals, and stamens 4—5 each; stamens opposite petals; ovary 3-chambered; chambers 1-ovuled. (p. 157.)

ORDER 24. *Aceríneæ* (The Maple Family).—Trees with opposite, palmately-lobed leaves and small, green, polysymmetric flowers; sepals and petals 4—9 each; stamens 8, on a disk; carpels 2; fruit a double samara. (p. 159.)

ORDER 25. *Leguminósæ* (The Pea Family).—Shrubs or herbs with scattered, stipulate, usually compound leaves and papilionaceous flowers; sepals and petals 5 each; stamens 10, monadelphous or diadelphous; carpel 1; fruit a pod. (p. 162.)

ORDER 26. *Rosáceæ* (The Rose Family).—Trees, shrubs, or herbs with scattered, stipulate, simple or compound leaves and polysymmetric flowers; sepals 4—5; petals 4—5; stamens many; carpels, 1, 2, 5, or many, free or united; fruit various. (p. 199.)

ORDER 27. *Saxifrágeæ* (The Saxifrage Family).—Shrubs and herbs with polysymmetric flowers; sepals 4—5; petals 4—5; stamens 4—10; carpels 2—4, united. (p. 239.)

ORDER 28. *Crassuláceæ* (The Stonecrop Family).—Succulent herbs with simple leaves and polysymmetric flowers; sepals, petals, and carpels 3—20 each, usually 5; stamens usually twice as many as the petals; carpels free, forming follicles. (p. 248.)

ORDER 29. *Droseráceæ* (The Sundew Family).—Small viscid marsh plants with radical leaves, small

(1) It is inferior in some Rosáceæ and Saxifrágeæ.

white polysymmetric flowers, and capsular fruits; sepals, petals, and stamens 5 each; carpels 3—5; ovules many. (p. 255.)

ORDER 30. *Lythrárieæ* (The Loosestrife Family).—Herbs with entire, generally opposite leaves and polysymmetric flowers; sepals and petals 3—6 each; stamens generally twice as many as the petals; carpels 2—6; fruit a many-seeded capsule. (p. 258.)

§§ Stamens epigynous; ovary syncarpous, inferior.

ORDER 31. *Halorágeæ* (The Mare's-tail Family).—Aquatic herbs with opposite or whorled leaves and very inconspicuous flowers; sepals 2—4, or absent; petals 2—4, valvate or absent; stamens 1—8; carpels 1—4; styles distinct; ovules 1 in each chamber. (p. 261.)

ORDER 32. *Onagrárieæ* (The Willow-herb Family).—Herbs with simple exstipulate leaves and generally conspicuous polysymmetric flowers; sepals 2—4, valvate; petals 2—4, contorted, or absent; stamens 2—8; carpels 1—6, usually 4. (p. 267.)

ORDER 33. *Cucurbitáceæ* (The White Bryony).—A hispid climbing herb with tendrils, palmately-lobed leaves, greenish diœcious flowers, and scarlet berries; sepals 5, united; petals 5, united; stamens 3; carpels 3. (p. 275.)

ORDER 34. *Umbelliferæ* (The Parsley Family).—Herbs, mostly with pinnate leaves, sheathing at the base, and compound umbels of small white flowers; sepals, petals, and stamens 5 each; carpels 2, 1-ovuled; fruit a cremocarp. (p. 278.)

ORDER 35. *Araliáceæ* (The Ivy).—A climbing shrub with adhesive rootlets, evergreen leaves, simple umbels of yellowish flowers, and black berries; sepals, petals, stamens, carpels, and seeds 5 each. (p. 329.)

ORDER 36. *Cornáceæ* (The Dogwood Family).—Shrubs and herbs with opposite leaves, small flowers, and berry-like fruits; sepals, petals, and stamens 4 each; carpels 2, 1-ovuled. (p. 331.)

Sub-Class 2. *Gamopétalæ.*—Having both calyx and corolla and the petals of the latter united.[1] (pp. 333—610.)

Series 1. *Epígynæ.*—Ovary inferior.[2] (pp. 333—448.)

§ Stamens epipetalous.[3]

Order 37. *Caprifoliáceæ* (The Honeysuckle Family).—Trees, shrubs, and herbs with opposite leaves and generally conspicuous flowers, sometimes monosymmetric; sepals 3—5; petals 3—5; stamens 4—10; carpels 3—5; ovules 1 or many in each chamber. (p. 333.)

Order 38. *Rubiáceæ* (The Bedstraw Family).—Herbs with whorled leaves and small polysymmetric flowers; sepals, petals, and stamens 4—6 each; carpels 2, 1-ovuled. (p. 342.)

Order 39. *Valeriáneæ* (The Valerian Family).—Herbs with opposite leaves and small asymmetric flowers; sepals 3—5, often pappose; petals 3—5; stamens 1 or 3; carpels 3; ovary 1-ovuled. (p. 350.)

Order 40. *Dipsáceæ* (The Teazle Family).—Herbs with opposite leaves and heads of small flowers, each with 4 or 5 petals and 4 free stamens; ovary 1-chambered and 1-ovuled. (p. 356.)

Order 41. *Compósitæ* (The Composite Family).—Herbs with heads of small flowers with tubular or ligulate corollas and 4—5 stamens with syngenesious anthers; style 2-fid; ovary 1-chambered, 1-ovuled. (p. 361.)

§§ Stamens on the ovary (epigynous).

Order 42. *Campanuláceæ* (The Bellflower Family).—Herbs with milky juice, scattered leaves, and usually conspicuous bluish flowers; sepals, petals, and

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(1) Gamopetalous forms occur exceptionally among Polypétalæ. (See p. xxxviii, note.) Free petals occur in some Ericáceæ, Plumbagíneæ, and Gentiáneæ. Petals are absent in some Primuláceæ and Oleáceæ.

(2) The ovary is also inferior in some Primuláceæ.

(3) The stamens are also epipetalous in some Campanuláceæ.

stamens 5 each; carpels 2—5; ovules many; placentation axile. (p. 435.)

Order 43. *Vacciniáceæ* (The Cranberry Family).—Undershrubs with scattered, simple leaves; small, drooping, reddish or pink flowers, and edible berries; sepals, petals, and carpels 4—5 each; stamens 8—10. (p. 445.)

Series 2. *Hypógynæ.*—Ovary superior. (pp. 448—610.)

§ Stamens free (hypogynous).

Order 44. *Ericáceæ* (The Heath Family).—Trees, undershrubs, or herbs with opposite or whorled, evergreen leaves, and small, often conspicuous, polysymmetric flowers; sepals, petals, and carpels 4—5 each; stamens 5—10. (p. 448).

Order 45. *Monotrópeæ.* (The Bird's-nest).—A fleshy yellowish saprophyte with scattered brown scale-leaves and bell-shaped polysymmetric flowers; sepals, petals, and carpels 4—5 each; petals scarcely cohering; stamens 8—10; fruit a capsule; seeds many. (p. 461.)

§§ Stamens epipetalous.[1]

Order 46. *Plumbagíneæ* (The Thrift Family).—Herbs, mostly maritime, with radical leaves and small flowers; sepals, petals, and stamens 5 each; stamens opposite the petals; carpels 3—5; ovary 1-chambered, 1-ovuled. (p. 463.)

Order 47. *Primuláceæ* (The Primrose Family).—Herbs, mostly with radical leaves, conspicuous polysymmetric flowers, and capsular fruits; sepals, petals, and stamens 4—9 each; stamens opposite the petals; ovary 1-chambered; placentation free-central; ovules many. (p. 466.)

Order 48. *Oleáceæ* (The Olive Family).—Trees or shrubs with opposite leaves and small polysymmetric

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(1) Except in some Plantagíneæ and Illecebráceæ.

flowers; sepals and petals 4 each, or absent; stamens 2; fruit a samara or berry-like. (p. 480.)

ORDER 49. *Apocynáceæ* (The Periwinkle Family).—Perennial, slender, prostrate undershrubs with milky juice; opposite, evergreen, entire leaves, and large polysymmetric flowers; sepals, petals, and stamens 5 each; corolla salver-shape, contorted in bud. (p. 484.)

ORDER 50. *Gentiáneæ* (The Gentian Family).—Bitter glabrous herbs, mostly with opposite, simple, entire leaves and conspicuous polysymmetric flowers; sepals, petals, and stamens 4—10 each; carpels 2; fruit a capsule; seeds many. (p. 486.)

ORDER 51. *Polemoniáceæ* (The Jacob's Ladder).—An erect herb with pinnate leaves and conspicuous polysymmetric flowers; sepals, petals, and stamens 5 each; carpels 3; fruit a 3-chambered, many-seeded capsule. (p. 496.)

ORDER 52. *Boragíneæ* (The Borage Family).—Herbs, mostly rough, with scattered, simple leaves, and conspicuous polysymmetric flowers; sepals, petals, and stamens 5 each; carpels 2, 2-ovuled; fruit a regma of 4 1-seeded nutlets. (p. 498.)

ORDER 53. *Convolvuláceæ* (The Bindweed Family).—Herbs, generally twining, with scattered, simple leaves, or leafless, and polysymmetric flowers; sepals, petals, and stamens 4—5 each; carpels 2, 2-ovuled; fruit a 4-seeded capsule. (p. 514.)

ORDER 54. *Solanáceæ* (The Nightshade Family).—Herbs or shrubs with scattered leaves and polysymmetric flowers; sepals, petals, and stamens 5 each; carpels 2; fruit a capsule, or berry-like, many-seeded. (p. 519.)

ORDER 55. *Scrophularíneæ* (The Figwort Family).—Herbs having mostly conspicuous monosymmetric flowers; sepals, petals, and stamens 4—5 each; corolla often bi-labiate; stamens generally didynamous; carpels 2; fruit a 2-chambered, many-seeded capsule. (p. 526.)

ORDER 56. *Orobancháceæ* (The Broom-rape Family).

—Fleshy, brownish parasites, with scattered scale-leaves and monosymmetric flowers; sepals 4—5; petals 5, bi-labiate; stamens didynamous; carpels 2; fruit a 1-chambered, many-seeded capsule. (p. 553.)

ORDER 57. *Lentibuláriеæ* (The Butterwort Family). —Insectivorous marsh herbs with monosymmetric, conspicuous flowers; sepals and petals 5 each, usually bi-labiate; stamens 2; carpels 2; fruit a 1-chambered, many-seeded capsule. (p. 558.)

ORDER 58. *Verbenáceæ* (The Vervain).—An erect, branched herb with opposite leaves and a compound spike of small monosymmetric flowers; sepals and petals 5 each; corolla bi-labiate; stamens didynamous; fruit a regma of 4 1-seeded nutlets. (p. 563.)

ORDER 59. *Labiátæ* (The Labiate Family).—Aromatic herbs with square stems, opposite leaves and verticillasters of bi-labiate flowers; sepals and petals 5 each, usually bi-labiate; stamens didynamous; carpels 2; fruit a regma of 4 1-seeded nutlets. (p. 565.)

ORDER 60. *Plantagíneæ* (The Plantain Family).—Herbs with simple, radical leaves and small greenish flowers; sepals, petals, and stamens 4 each, with slender filaments and exserted anthers; carpels 2—4; fruit a 1—4-chambered capsule. (p. 602.)

ORDER 61. *Illecebráceæ* (The Knot-grass Family).—Small herbs with simple, sessile leaves and small flowers; sepals and petals 4—5 each, or petals absent; stamens 1—10; carpels 2—3; ovary 1-chambered, 1-ovuled. (p. 606.)

SUB-CLASS 3. *Incomplétæ.*—Corolla, and sometimes calyx also, absent. (pp. 610—682.)

SERIES 1. *Monochlamýdeæ.*—Corolla alone absent. (pp. 611—649.)

§ Ovary superior and usually 1-chambered and 1-ovuled.[1]

ORDER 62. *Amaranthácеæ* (The Amaranth).—An annual, glabrous, prostrate herb, with scattered, petiolate, simple leaves, and small, axillary, green, monœcious flowers; sepals and stamens 3—5 each. (p. 611.)

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[1] It is 2-chambered in the Elms (Urticáceæ).

ORDER 63. *Chenopodiáceæ* (The Goose-foot Family). —Herbs with simple leaves, or leafless jointed stems and inconspicuous green flowers; sepals 3—5, persistent; stamens 1—5. (p. 612.)

ORDER 64. *Polygonáceæ* (The Persicaria Family).—Herbs with scattered simple leaves with sheathing stipules and small flowers; sepals 3—6, green or coloured, usually persistent; stamens 5—8. (p. 623.)

ORDER 65. *Thymelæáceæ* (The Daphne Family).—Shrubs with tough inner bark; simple, entire leaves; and sweet-scented, perfect flowers; sepals 4; stamens 8; fruit berry-like. (p. 634.)

ORDER 66. *Elæagnáceæ* (The Sea-Buckthorn).—A shrub with silvery scales; scattered, simple, entire leaves, and inconspicuous diœcious flowers; sepals 2—4, persistent; stamens 4; fruit berry-like. (p. 636.)

ORDER 67. *Urticáceæ* (The Nettle Family).—Trees, shrubs, or herbs with tough inner bark; simple, usually stipulate and serrate leaves; and small flowers; sepals 1—8; stamens 4—8; carpels 1—2; ovary sometimes 2-chambered. (p. 637.)

§§ Ovary inferior.

ORDER 68. *Aristolochiáceæ* (The Birthwort Family). —Herbs and climbing shrubs with scattered simple leaves and perfect flowers, sometimes monosymmetric; sepals 2—3, sometimes coloured; stamens 6—12; ovary 4—6-chambered; ovules many. (p. 644.)

ORDER 69. *Loranthàceæ* (The Mistletoe). — A green, parasitic, much-branched shrub with opposite, simple, entire leaves; inconspicuous diœcious flowers and white viscid berries; sepals and stamens 4 each; ovary 1-chambered, 1-ovuled. (p. 646.)

ORDER 70. *Santaláceæ* (The Bastard Toad-flax).—

A slender, perennial, herbaceous, prostrate root-parasite, with scattered, linear leaves and inconspicuous perfect flowers; sepals and stamens 4—5 each; ovary 1-chambered; ovules 3; fruit dry, 1-seeded. (p. 648.)

Series 2. *Achlamýdeæ.*—Calyx and corolla both absent;[1] flowers imperfect. (pp. 649—682.)

§ Flowers not in catkins.

Order 71. *Empetráceæ* (The Crowberry).—An evergreen mountain shrub, resinous, with scattered narrow leaves; inconspicuous, diœcious flowers; and a drupaceous fruit; perianth of 6 scales; stamens 3; ovary 6—9-chambered; ovules 1 in each chamber. (p. 649.)

Order 72. *Euphorbiáceæ* (The Spurge Tribe).—Trees, shrubs, or herbs, generally with milky juice; leaves scattered, simple; flowers inconspicuous, sometimes in cup-like involucre; stamens 1, 4, or 8—20; carpels 2—3; ovules 1—2 in each carpel. (p. 651.)

Order 73. *Ceratophýlleæ* (The Hornwort Family).—Submerged herbs with whorled dichotomous leaves and minute monœcious flowers; stamens 12—20; ovary 1-chambered, 1-ovuled. (p. 661.)

§§ Flowers in catkins.

Order 74. *Myricáceæ* (The Bog-Myrtle).—An aromatic marsh shrub with scattered simple leaves, inconspicuous flowers and a small drupe; stamens 4—8; ovary 1-chambered, 1-ovuled. (p. 664.)

Order 75. *Cupulíferæ* (The Mast-bearing Family).—Trees or shrubs with scattered, simple, stipulate leaves and small flowers; stamens 2—20; carpels 2—3, 1—2-ovuled; fruit a 1—2-chambered nut with 1 seed in each chamber. (p. 664.)

Order 76. *Salicíneæ* (The Willow Family).—Trees,

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(1) Except in the Box and the Mercury (Euphorbiáceæ).

shrubs, or herbs, with scattered, simple, stipulate leaves, and conspicuous catkins which generally precede the leaves; stamens 2—30; carpels 2; ovary 1-chambered; seeds many, with silky hairs. (p. 675.)

CLASS II. *Monocotylédons.*—Plants having one cotyledon, parallel-veined leaves and floral leaves generally in whorls of 3.[1] (pp. 682—896.)

SUB-CLASS 1. *Petaloídeæ.*—Having the perianth usually petaloid and coloured, not as a rule green or glumaceous.[2] (pp. 683—784.)

SERIES 1. *Epígynæ.*—Perianth superior. (pp. 683—723.)

ORDER 77. *Hydrocharídeæ* (The Frog-bit Family).—Aquatic herbs with conspicuous flowers, polysymmetric and diœcious; sepals and petals 3 each; stamens 3—12; carpels 3—6; fruit a berry. (p. 683.)

ORDER 78. *Orchídeæ* (The Orchid Family).—Herbs mostly with tuberculate roots and conspicuous mono symmetric flowers; sepals, petals, and carpels 3 each; stamens 1—2, gynandrous; ovary 1-chambered; fruit a many seeded capsule. (p. 687.)

ORDER 79. *Irídeæ* (The Iris Family).—Herbs with fleshy underground stems, narrow leaves and handsome flowers; sepals, petals, stamens, and carpels 3 each; ovary 3-chambered; fruit a many-seeded capsule. (p. 709.)

ORDER 80. *Amaryllídeæ* (The Amaryllis Family).—Herbs with bulbs, narrow leaves and handsome polysymmetric flowers; sepals, petals and carpels 3 each; stamens 6; ovary 3-chambered; fruit a capsule; seeds 3 or more. (p. 715.)

ORDER 81. *Dioscóreæ* (The Black Bryony).—A

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(1) Leaves are net-veined in the Black Bryony (Dioscoreáceæ), Herb Paris (Liliáceæ), and Arum (Aroídeæ); and the floral leaves are in whorls of four in Naiadáceæ.

(2) The perianth is membranous or green in Juncáceæ, Naiadáceæ, and Eriocáuleæ, and absent in Typháceæ, Aroídeæ, and Lemnáceæ.

climbing herbaceous perennial with broad, glossy net-veined leaves and small monœcious flowers; sepals, petals, and carpels 3 each; stamens 6; ovary 3-chambered; fruit a berry; seeds 6. (p. 721.)

SERIES 2. *Hypógynæ.* — Perianth inferior or absent. (pp. 723—784.)

ORDER 82. *Liliáceæ* (The Lily Family).—Mostly herbs with conspicuous, polysymmetric flowers; sepals, petals, and carpels 3 each; stamens 6; ovary 3-chambered; seeds 3 or more. (p. 723.)

ORDER 83. *Juncáceæ* (The Rush Family).—Herbs with cylindric or narrow leaves and small brown flowers; perianth membranous; sepals, petals, and carpels 3 each; stamens 6; ovary 1—3-chambered; fruit capsular; seeds 3 or more. (p. 746.)

ORDER 84. *Typháceæ* (The Reed-mace Family).—Erect aquatic plants with long linear leaves and small monœcious flowers in conspicuous spikes or heads; perianth absent; stamens many; fruit 1-chambered, 1 seeded. (p. 755.)

ORDER 85. *Aroídeæ* (The Cuckoo-pint Family).—Herbaceous perennials with radical leaves, sometimes net-veined and small flowers on a fleshy spadix enclosed in a leafy spathe; perianth of 6 leaves or absent; stamens 1—6; ovary 1—3-chambered; fruit berry-like; seeds few. (p. 759.)

ORDER 86. *Lemnáceæ* (The Duckweed Family).—Minute floating plants with green thalloid fronds, rarely flowering; flowers very minute, in a spathe; stamen 1; ovary 1-chambered; ovules 1—7. (p. 764.)

ORDER 87. *Alismáceæ* (The Water-Plantain Family).—Water-plants with radical, regularly net-veined leaves and conspicuous perfect flowers; sepals and petals 3 each; stamens 6, 9, or more; carpels numerous and distinct, or nearly so, 1—2-ovuled. (p. 765.)

ORDER 88. *Naiadáceæ.* (The Pond-weed Family).—

Aquatic plants, mostly with floating or submerged leaves and inconspicuous flowers; sepals 4—6 or absent; stamens and carpels 1—6 each; ovules 1—3 in each carpel. (p. 770).

Order 89. *Eriocáuleæ* (The Pipe-wort).—An aquatic plant with subulate leaves and minute monœcious flowers; sepals, petals, and carpels 2 each; stamens 4; ovary 2-chambered; chambers 1-ovuled. (p. 784.)

Sub-Class 2. *Glumíferæ.*—Having no true perianth, but the flowers in the axils of chaff-like scales (glumes) forming spikelets. (pp. 784—896.)

Order 90. *Cyperáceæ* (The Sedge Family).—Herbs with stems usually solid and triangular in section; leaves tristichous, linear, with tubular sheaths; stamens 1—3; anthers basifixed; carpels and stigmas 2—3; ovary 1-chambered, 1-ovuled. (p. 785.)

Order 91. *Gramíneæ* (The Grass Family).—Herbs with stems usually hollow; leaves distichous, linear, with split sheaths; stamens 2—3; anthers versatile; carpels and stigmas 1—2; ovary 1-chambered, 1-ovuled. (p. 825.)

Division II. *Gymnosperms.*—Plants having no ovary, the ovules being naked. (pp. 896—903.)

Class I. *Coníferæ.*—Trees and shrubs with rigid, evergreen, needle-shaped or linear leaves; and imperfect flowers, the staminate ones deciduous and catkin-like, the seed-bearing ones either a solitary ovule or a cone of fleshy or woody scales. (pp. 897—903.)

Order 92. *Araucariáceæ* (The Monkey-Puzzle Family).—Cones perfect; seeds with woody or leathery testa and no aril. (p. 898.)

Order 93. *Taxáceæ* (The Yew Family).—Seeds projecting beyond carpels or without carpels, with fleshy testa or aril. (p. 901.)

FLOWERS OF THE FIELD.

DIVISION I. ANGIOSPERMS.

CLASS I. DICOTYLEDONS.

THIS is the more extensive of the two classes into which ordinary flowering-plants, or angiosperms, are divided, and derives its name from the two *cotyledons* or leaves of the embryo which are almost invariably present in the seed of this class. These cotyledons enclose the *plumule* or bud of the future shoot, which, when the seed begins to sprout or germinate, lengthens into the leafy stem. At the same time the embryo in this class puts forth in a downward direction a main root, called in its early stage a *radicle*. In the perennial woody members of the class the stem increases in diameter by annual concentric layers of wood formed near the outer surface of the stem, but beneath the bark, this type of stem being called *exogenous* (growing externally). The leaves have irregularly netted veins of various degrees of fineness. The *flowers* have their sepals and petals, and (less regularly) their stamens and carpels, in whorls of 5 each or sometimes of 2 or 4.

SUB-CLASS I. POLYPÉTALÆ.

Flowers generally furnished with both calyx and corolla; *petals* generally distinct.

SERIES I. THALAMIFLÓRÆ.—Ord. I.—XXI.

Petals and *stamens* springing from the floral receptacle or *thalamus*, below the ovary (*hypogynous*); *ovary* superior.

NATURAL ORDER I. RANUNCULÁCEÆ.—THE BUTTERCUP FAMILY.

Herbs with a watery, acrid, and often poisonous juice and scattered leaves (except *Clématis*, which is a shrub with opposite leaves). The *leaves* are generally much divided, and the *flowers* conspicuous and either polysymmetric or monosymmetric. The *sepals* and *petals* sometimes graduate into one another, and are often spurred, the sepals being 3, 5, or more, and the petals often absent, or 5, rarely 2, 4, or more. The *stamens* are indefinite in number and hypogynous; the *carpels* rarely 1 or 2, generally 3—5 or more numerous, distinct, and forming either an etærio of one-seeded indehiscent achenes or a ring of many-seeded follicles. In *Actæa* there is exceptionally a berry-like fruit. The Order is a numerous one, chiefly characteristic of temperate regions. Many of them are garden favourites. Species of *Aconítum* yield valuable drugs.

† *Carpels* 1-*seeded.*

1. CLÉMATIS.—A shrub with opposite pinnate leaves, climbing by twisting its leaf-stalks; *sepals* 4—

6, petaloid, valvate ; *petals* 0 ; *carpels* ending in a long feathery tail.

2. THALÍCTRUM.—*Sepals* 4—5, petaloid, imbricate ; *petals* 0 ; *carpels* without tails.

3. ANEMÓNE.—*Involucre* of three leafy bracts some distance below the flower ; *sepals* 4—20, petaloid, imbricate ; *petals* 0.

*4. ADÓNIS.—*Sepals* 5, petaloid, imbricate ; *petals* 5—10, scarlet ; *carpels* without tails.

5. MYOSÚRUS.—A small plant ; *sepals* 5, imbricate, spurred ; *petals* 5, tubular ; *carpels* along an elongated axis.

6. RANÚNCULUS.—*Sepals* 3—5, imbricate ; *petals* 5 or more, with a nectary at the base ; *carpels* in an oblong or globular head.

†† *Carpels many-seeded.*

7. CÁLTHA.—*Sepals* 5, petaloid, imbricate, yellow ; *petals* 0 ; *fruit* of numerous follicles.

8. TRÓLLIUS.—*Sepals* 5—15, petaloid, imbricate, yellow ; *petals* 5—15, small, linear, flat ; *fruit* of 5 or more follicles.

9. HELLÉBORUS.—*Sepals* 5, persistent ; *petals* 5—10, small, tubular, bi-labiate ; *fruit* of 3 to 10 sessile follicles.

*10. ERÁNTHIS.—*Sepals* 5, deciduous ; *petals* 5, small, tubular, bi-labiate, clawed ; *fruit* of 5 or 6 stalked follicles.

11. AQUILÉGIA.—*Sepals* 5, petaloid, deciduous ; *petals* 5, large, spurred ; *fruit* of 5 follicles.

*12. DELPHÍNIUM.—*Flower* monosymmetric ; *sepals* 5, petaloid, deciduous, the posterior one spurred ; *petals* 2—4, 2 enclosed in spur ; *fruit* of 1—5 follicles.

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* Genera the numbers of which are preceded by an asterisk, and species the numbers of which are followed by one, are probably not wild.

13. Aconítum.—*Flower* monosymmetric; *sepals* 5, petaloid, deciduous, the posterior one hooded; *petals* 2—5, 2 tubular, with long claws, enclosed in hood; *fruit* of 3—5 follicles.

14. Actæa.—*Sepals* 3—5, petaloid, caducous; *petals* 4, minute, or absent; *fruit* berry-like, black, many-seeded.

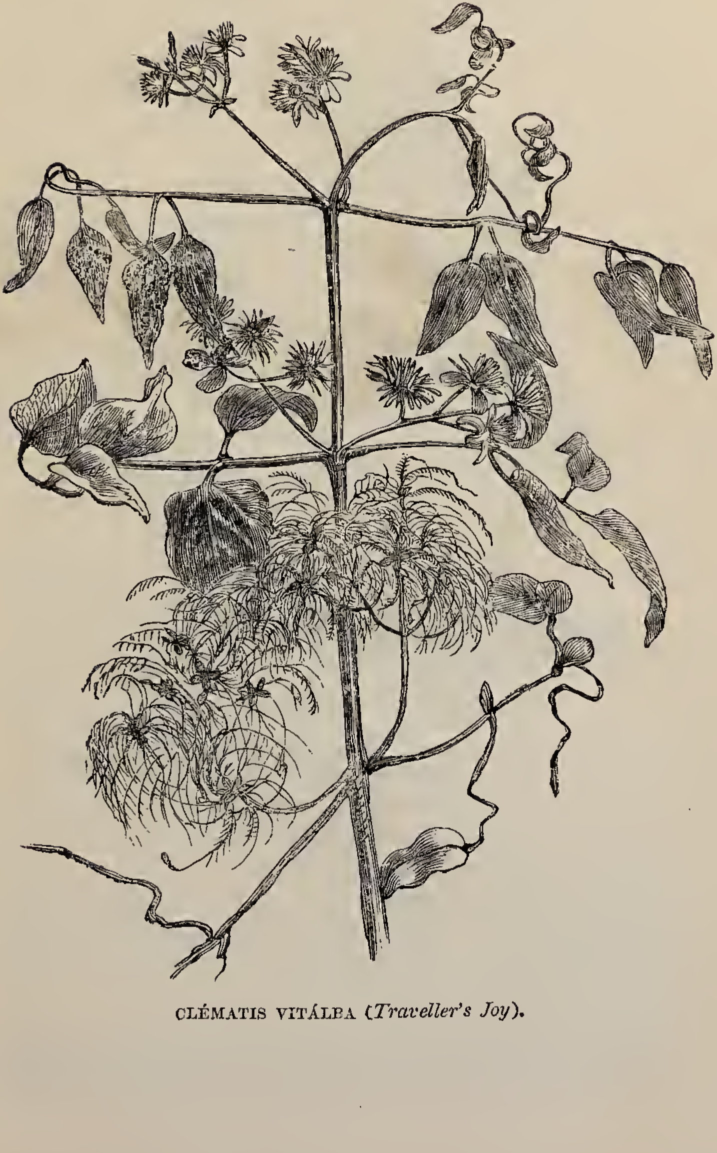
15. Pæónia.—*Sepals* 5, persistent; *petals* 5—10; *fruit* of 2—5 follicles.

1. Clématis (Traveller's Joy).—A shrub with woody stem; *leaves* opposite, compound, exstipulate, some of them climbing by twisting their petioles; *sepals* 4, valvate, petaloid; *petals* 0; *stamens* many; *carpels* many, 1-ovuled; *fruit* an etærio of achenes with long, feathery awns. (Name from the Greek *kléma*, a vine-shoot.)

1. *C. Vitálba* (Traveller's Joy).—The only British species. A hedge-shrub, especially common on calcareous or chalky soils; well distinguished in summer by its numerous clusters of greenish-white, sweet-scented flowers; and still more conspicuous in autumn and winter from its tufts of feathery white fruits, whence it gets the popular name of "Old Man's Beard."—Fl. May, June. Perennial

2. Thalíctrum (Meadow-rue).—Perennial; *leaves* compound, stipulate; *stipules* united to the leaf-stalk; *sepals* 4—5, imbricate, petaloid; *petals* 0; *stamens* many, yellow; *carpels* few, 1-ovuled; *fruit* an etærio of achenes without awns. (Name from the Greek *thallo*, I flourish.)

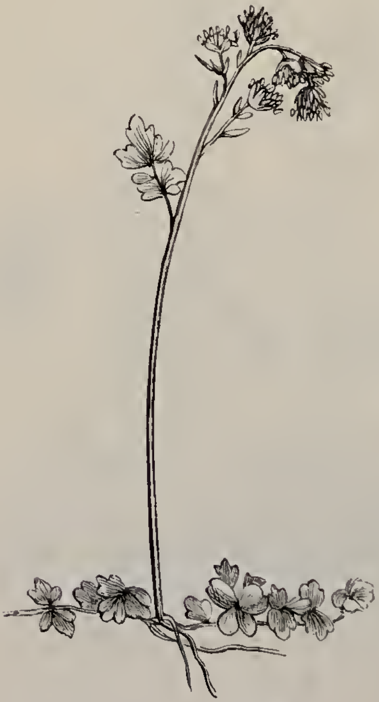
1. *T. alpínum* (Alpine Meadow-rue).—*Stem* unbranched; *leaves* bi-ternate, glaucous beneath; *flowers* in a simple terminal raceme, drooping; *sepals* purplish.—A graceful little plant, 4 to 10 in. high,



CLÉMATIS VITÁLBA (*Traveller's Joy*).

occurring on the mountains of Wales and Scotland.—Fl. June—August.

2. *T. dunénsé* (Sand-dune Meadow-rue).—*Stem* 6—18 in. high, branched, rigid, zigzag, furrowed, leafless at the base; *leaves* tripinnate, stipulate; *stipules* with spreading auricles; *leaflets* 3—7-lobed; *flowers* in a loose, broad, spreading, compound raceme, on slender stalks, drooping, with pale purplish sepals and conspicuous yellow stamens. On sandy seashores.—Fl. June—August.


THALICTRUM ALPINUM (*Alpine Meadow-rue*).

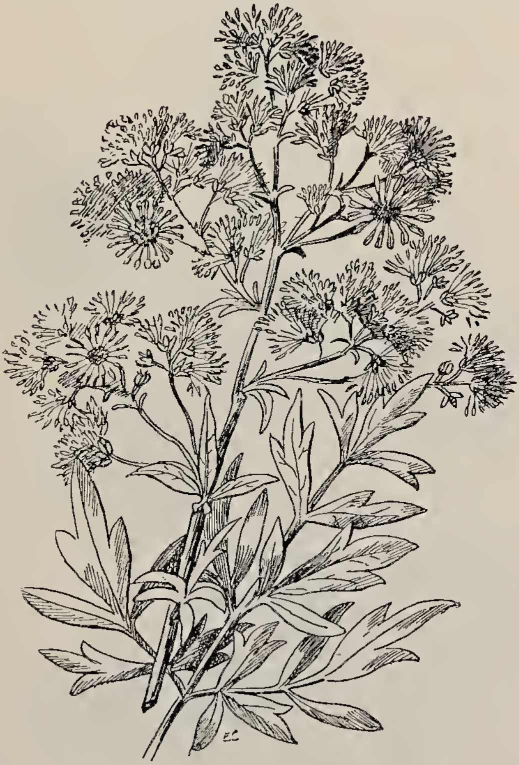
3. *T. collínum* (Hill Meadow-rue).—Grows in stony places and differs from *T. dunénsé*, chiefly in reaching a larger size and in having a narrower cluster of flowers with sub-erect branches.

4. *T. május* (Greater Meadow-rue).—Stem 3 feet high, solid, flexuous, branched, leafy at its base; *leaves* tripinnate, stipulate; *stipules* with reflexed auricles; *leaflets* large, variable, 3—5-lobed; *flowers* in a loose, leafy, compound raceme, greenish-yellow. In damp, bushy, and stony places, chiefly in the north.—Fl. July, August.

5. *T. Kóchii*, which reaches 4 feet and has a hollow, less furrowed stem, smaller leaflets, horizontal auricles

to the stipules, and no leaves among the flowers; grows only in the Lake district.

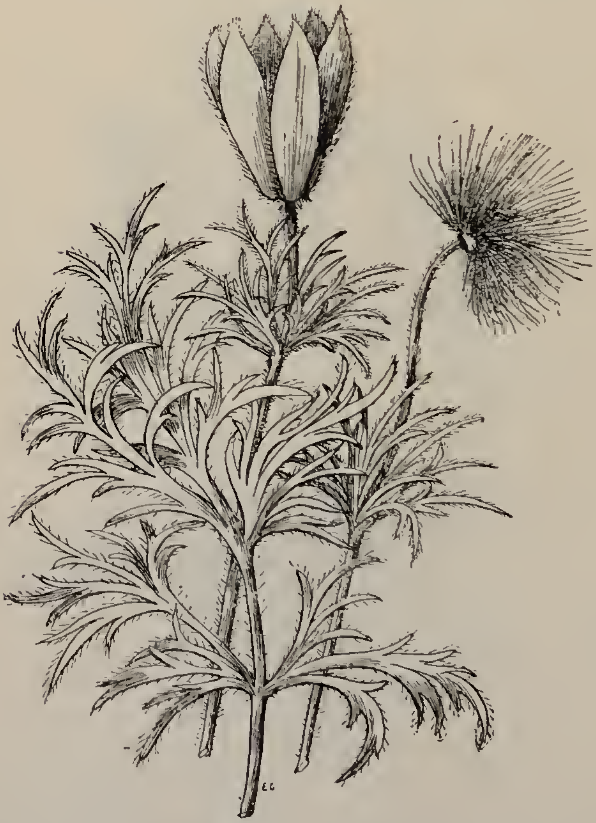
6. *T. flávum* (Yellow Meadow-rue).—Stem erect, branched, furrowed, 2—4 feet high; *leaves* bipinnate; *flowers* crowded, erect, pale yellow.—Not uncommon about the banks of ditches and rivers.—Fl. July, August.



THALÍCTRUM FLÁVUM (*Yellow Meadow-rue*).

3. Anemóne (Wind-flower).—Perennial herbs with underground stems; *leaves* radical, deeply lobed;

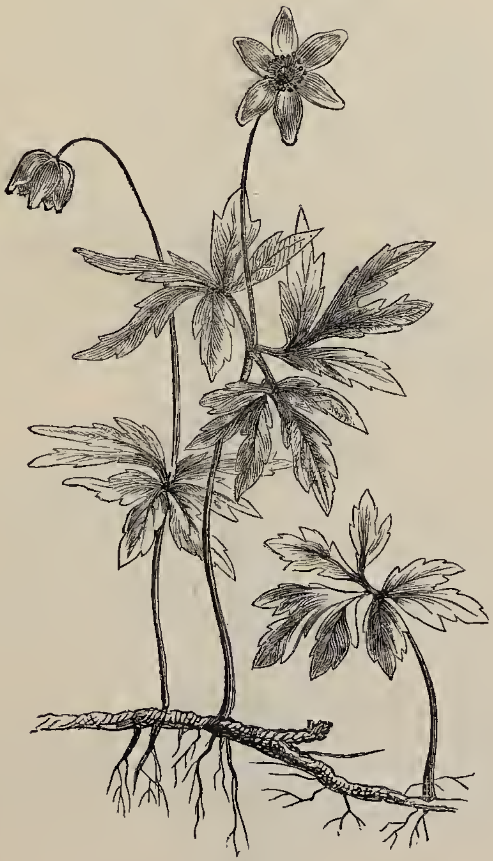
flowers solitary, with an involucre of three leafy, lobed bracts some distance below each; *sepals* 4—20, petaloid, imbricate; *petals* 0; *stamens* many; *carpels* many, 1-ovuled; fruit an etærio of achenes. (Name from the Greek *ănĕmŏs*, the wind, from the exposed situations in which they grow.)



ANEMÓNE PULSATÍLLA (*Pasque-flower*).

1. *A. Pulsatílla* (Pasque-flower).—Silky, 4—10 in. high; *leaves* tripinnate, with linear segments,

increasing after flowering; *involucre* sessile, with linear segments; *flowers* drooping in bud, 1½ in. across; *sepals* violet, silky outside, slightly reflexed;



ANEMÓNE NEMORÓSA (*Wood Anemone*).

stamens yellow; *achenes* with feathery awns; *peduncle* lengthening after flowering.—In high pastures; rare. Its beautiful flowers appear about Easter-tide (*Pâques*), from which the plant derives its popular name.—Fl. March—June.

2. *A. nemorósa* (Wood Anemone).—4—8 in. high; *leaves* radical, petiolate, bi-ternately lobed; *involucre* stalked, leaves resembling the radical ones; *flowers* drooping, 1—1½ in. across; *sepals* 6, petaloid, white, or tinged with pink, very rarely blue, glabrous, spreading; *achenes* without awns, downy. One of our most beautiful, though also one of the commonest, spring flowers.—Fl. March—May.

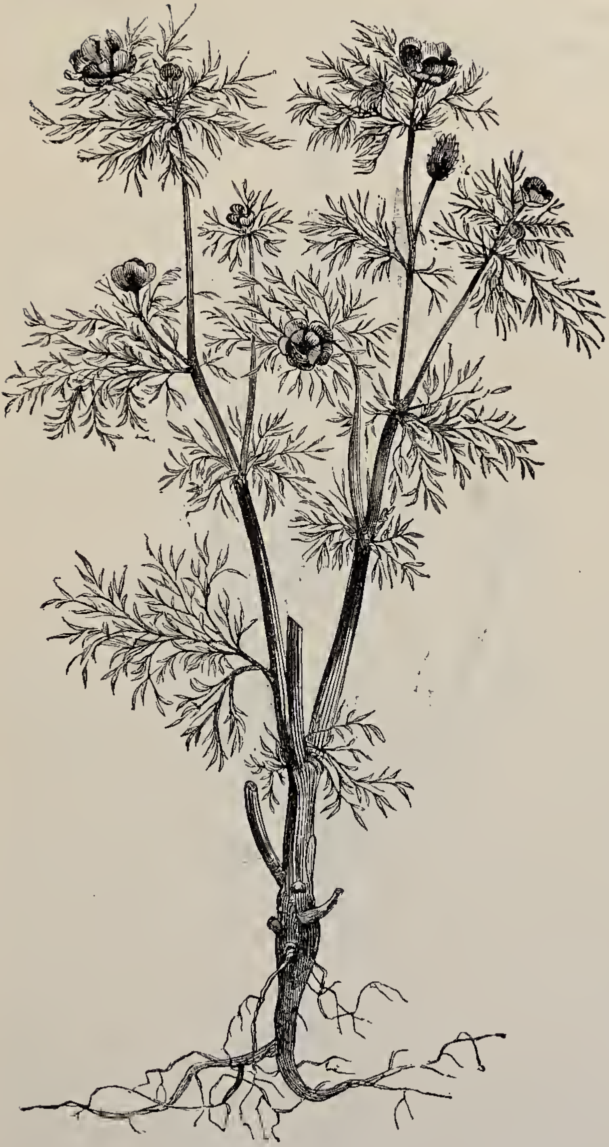
3.* *A. ranunculóides* (Yellow Anemone), with ternate or quinate leaves, sub-sessile involucre and yellow sepals, and

4.* *A. apennína* (Apennine Anemone), with numerous narrow blue sepals and erect flowers, both flowering in April, are occasionally met with as escapes from cultivation.

*4. ADÓNIS (Pheasant's-eye).—An annual herb, with much-divided leaves; *sepals* 5, imbricate; *petals* 5—10; *carpels* many, 1-ovuled; *fruit* an etærio of achenes without awns. (Named from Adonis, a beautiful youth, who, according to Greek legend, was killed by a wild boar, his blood colouring the neighbouring flowers.)

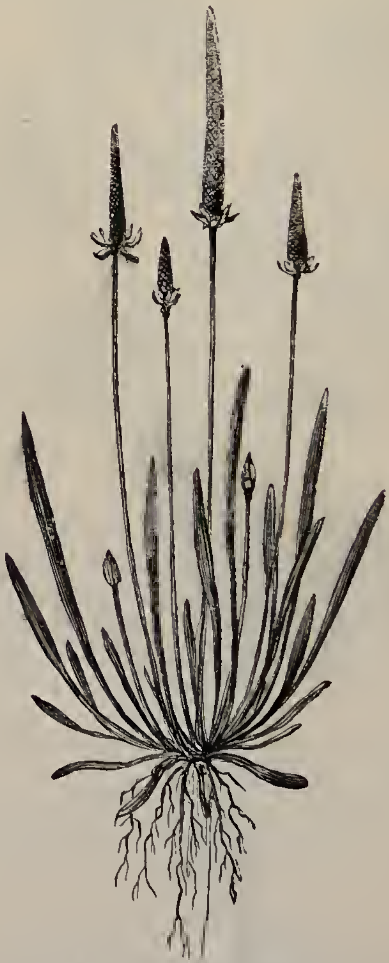
1.* *A. autumnális* (Autumn Pheasant's-eye).—6—8 in. high, with tripinnatifid leaves, finely cut into linear segments, and scarlet petals, black at their bases, flowering in September, occurs as a weed in cornfields, but is not a native.

5. MYOSÚRUS (Mouse-tail).—A small annual herb; *leaves* radical, linear; *inflorescence* several 1-flowered scapes; *sepals* 5, spurred; *petals* 5, tubular; *stamens* few; *carpels* numerous, arranged spirally on an elongated floral receptacle, 1-ovuled; *fruit* an etærio of



ADÓNIS (*Pheasant's-eye*).

achenes, without awns. (Name from the Greek *muŏs oura*, mouse's tail.)



MYOSÚRUS (*Mouse-tail*).

1. *M. mínimus* (Mouse-tail).—1—5 in. high; *leaves* fleshy; *peduncle* 1—4 in. high; *petals* pale yellowish; *receptacle* 1—1½ in. long, tapering.—

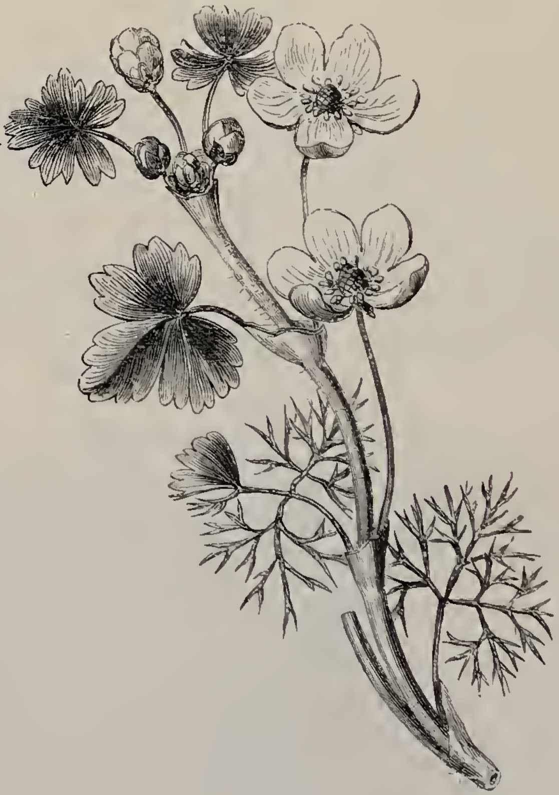
This little plant grows in cornfields, generally in damp places, and is easily distinguished from every other British plant by the arrangement of its carpels, which resembles a mouse's tail.—Fl. April—June.

6. Ranúnculus (Crowfoot, Buttercup, &c.).—Herbs, annual or perennial; *leaves* entire, palmately lobed, or compound, sometimes with membranous stipules; *sepals* 5, rarely 3, imbricate, deciduous; *petals* 5 or more, with a nectary at the base, yellow or white; *stamens* many, yellow; *receptacle* globular or oblong; *carpels* many, 1-ovuled; *fruit*, an etærio of achenes, apiculate. (Name, the diminutive from the Latin *rana*, a frog, an animal which frequents the kind of places where these plants grow.)

* Petals white, with a yellow claw.

1. *R. aquátilis* (Water Crowfoot).—This was Linnæus' collective name for a very puzzling group of plants, which botanists now consider as at least nine or ten distinct species. They are all water-plants with submerged leaves deeply cleft into hair-like segments, and broad membranous stipules. The chief forms are: *R. circinátus*, with large flowers, no floating leaves, and the segments of the submerged ones rigid and spreading in one plane; *R. flúitans*, with much longer leaf-segments all lying parallel, leaves often a foot long, but flower-stalks shorter; *R. pseudo-flúitans*, with similar but shorter leaves, and much longer peduncles; *R. trichophýllus*, with small flowers, and the leaf-segments rigid and spreading, but not in one plane; *R. Drouétii*, in which the leaf-segments collapse into a tassel when taken from the water; *R. heterophýllus*, with large flowers on stalks as long as the leaves, submerged leaves collapsing into a

tassel, and 3-lobed floating leaves; *R. peltátus*, in which the segments of the submerged leaves spread out when taken from the water; *R. Baudótii*, with stouter flower-stalks and floating leaves deeply divided into wedge-shaped segments; and *R. intermédius*, with small pinkish flowers on short slender stalks, and seldom any submerged leaves. The forms without floating leaves are the "long mosses in the stream" of Tennyson. Those with floating leaves occur in standing water.—Fl. May—September.



R. AQUÁTILIS (*Water Crowfoot*).

2. *R. Lenormándi* (Mud Crowfoot).—Floating or creeping on mud; *leaves* all reniform, crenate; *flowers* ½ in. across.—Fl. June—August.

3. *R. hederáceus* (Ivy-leaved Crowfoot).—*Leaves* all reniform, 5-lobed, often with a black spot on them; *flowers* very small; *petals* scarcely longer than the calyx.—Growing in water or on mud.—Fl. May—September.

** Petals yellow. Terrestrial.

4. *R. scelerátus* (Celery-leaved Crowfoot).—*Stem* 1—2 feet high, hollow, with abundant very acrid juice; *leaves* glabrous, glossy, cut into three oblong lobes; *flowers* very small, pale yellow; *fruit* an oblong etærio.—Growing in watery places.—Fl. May—September. Annual.

5. *R. Flámmula* (Lesser Spearwort).—*Stem* creeping at the base, 4—18 in. high; *leaves* petiolate, ovate, or lanceolate, hairy or glabrous; *flowers* ½—¾ in. across. Named from its causing inflammation or redness of the skin.—Growing in wet places.—Fl. June—August. Perennial.

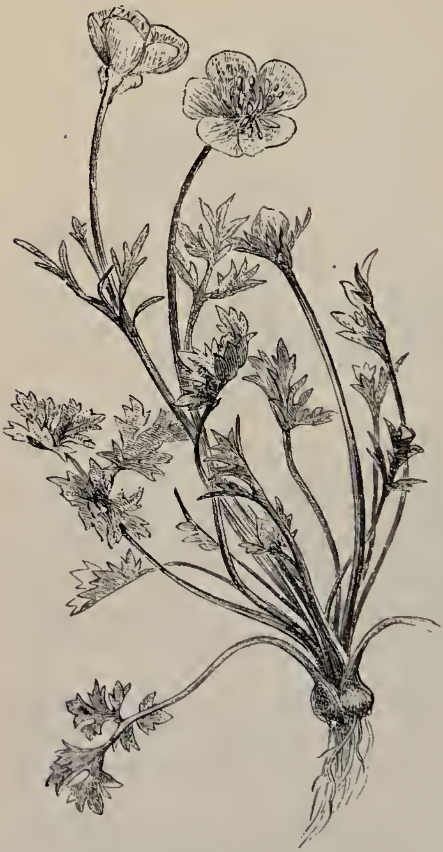
6. *R. réptans* (Prostrate Spearwort).—A slender creeping form with linear leaves, occurs rarely in the north; and

7. *R. petioláris*, with its earlier radical leaves reduced to recurved subulate petioles, grows under water near the shores of lakes in the north-west of Scotland.

8. *R. Língua* (Great Spearwort).—*Stem* erect, hollow, 2—3 feet high; *cauline leaves* lanceolate, sessile, 6—10 in. long, but earlier submerged ones cordate and obtuse; *flowers* 2 in. across.—The largest British species, an uncommon but handsome plant, growing in watery places. (Named from the shape of the leaf.)—Fl. June—September. Perennial.

9. *R. auricomus* (Goldilocks).—*Root* fibrous; *stem*

slender, about a foot high, nearly smooth; *radical leaves* long-stalked, reniform, 3—7-lobed; *cauline leaves* sessile, palmatifid, with sub-entire lobes; ¾in. across; *sepals* spreading, downy, yellow; *petals* often partly absent. —In copses.—Fl. April, May. Perennial.



R. BULBÓSUS (*Bulbous Buttercup*).

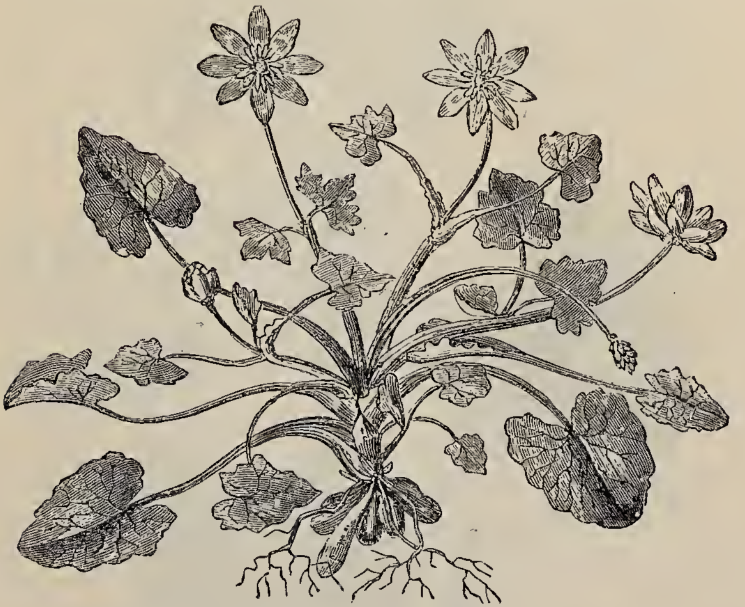
10. *R. ácris* (Buttercup).--*Root* fibrous; *stem* sometimes a rhizome, without runners; *radical leaves* palmately 3—7-lobed, lobes deeply cut; *cauline leaves* 3-lobed with entire linear lobes; *peduncle* branched, not furrowed, 1—3 feet high, hairy; *flowers* 1 in. across; *sepals* downy, spreading; *carpels* glabrous. Meadows. — Fl. April — September. Perennial.

11. *R. répens* (Creeping Buttercup).—Differing mainly in its less height, long *runners*, and furrowed hairy *peduncle*.—A troublesome weed in meadows and waste ground.—Fl. May—August. Perennial.

12. *R. bulbósus* (Bulbous Buttercup).—Differing

mainly in its *stem*, about 1 foot high and bulbous at the base; glabrous, furrowed *peduncle;* and reflexed *sepals.*—Meadows.—Fl. May, June. Perennial.

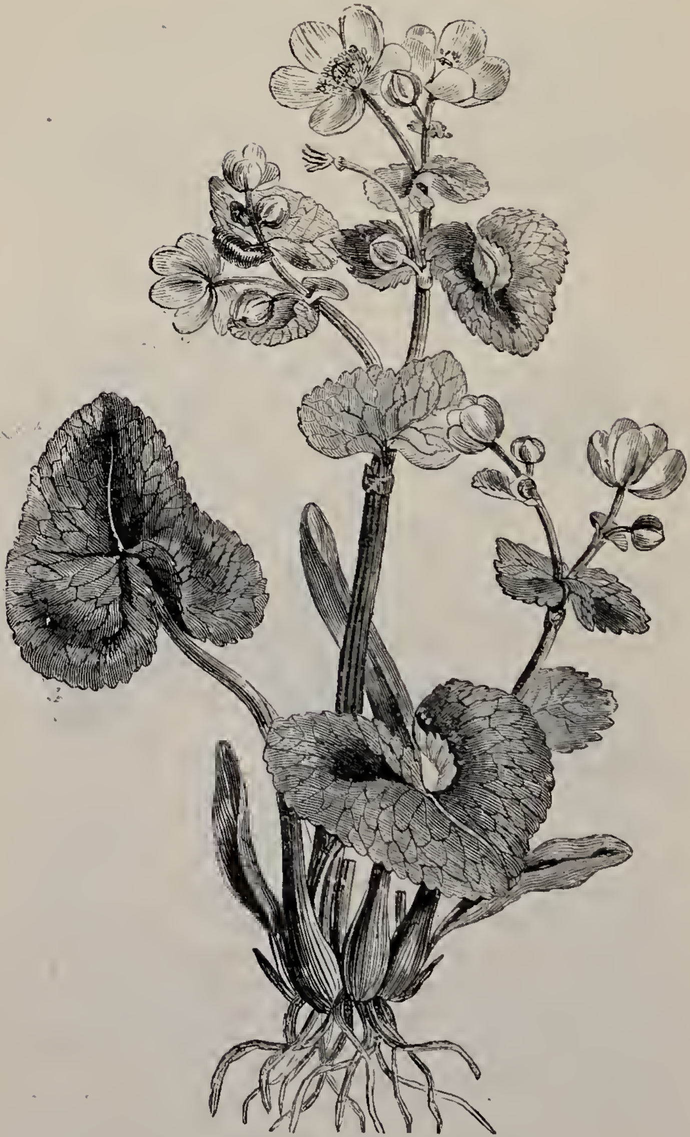
13. *R. sárdous* (Pale Hairy Buttercup).—*Root* fibrous; *stem* 6—18 in. high, hairy; *leaves* lobed; *peduncle* furrowed, with spreading or reflexed hairs; *flowers* 1 in. across; *sepals* reflexed; *petals* pale yellow; *carpels* compressed, with small warts near the margin. —Waste places.—Fl. June—October. Annual.



R. FICÁRIA (*Lesser Celandine*).

14. *R. parviflórus* (Small-flowered Crowfoot).—Differing in its prostrate, hairy *stem;* less divided *leaves; flowers* not more than ¼ inch across; and hooked tubercles on the *carpels.*—Dry waste places.—Fl. May—August. Annual.

15. *R. arvénsis* (Corn Crowfoot).—Nearly glabrous; *stem* erect; *leaves* deeply 3-lobed, with linear-lan-



CÁLTHA (*Marsh Marigold*).

ceolate lobes; *flowers* ½ in. across; *sepals* spreading; *petals* pale yellow; *carpels* few and very spinous.—Cornfields.—Fl. May—July. Annual.

16. *R. Ficária* (Lesser Celandine).—Glabrous. *Root* fasciculate; *leaves* mostly radical, cordate, stalked, angular, or crenate; *flowers* about 1 in. across; *sepals* 3—5; *petals* 8—12, acute, golden-yellow; *carpels* small, smooth. One of our brightest spring flowers, studding every bank with its numerous glossy star-like flowers, the favourite of the poet Wordsworth, not to be confounded with the Greater Celandine (see p. 39).—Fl. March—May. Perennial.

7. CÁLTHA (Marsh Marigold).—Aquatic glabrous herbs, with five yellow, imbricate, deciduous *sepals*, no *petals*, and a ring of 5—10 sessile many-ovuled *carpels* forming follicles in the fruit. (Name from the Greek *kálathos*, a cup.)

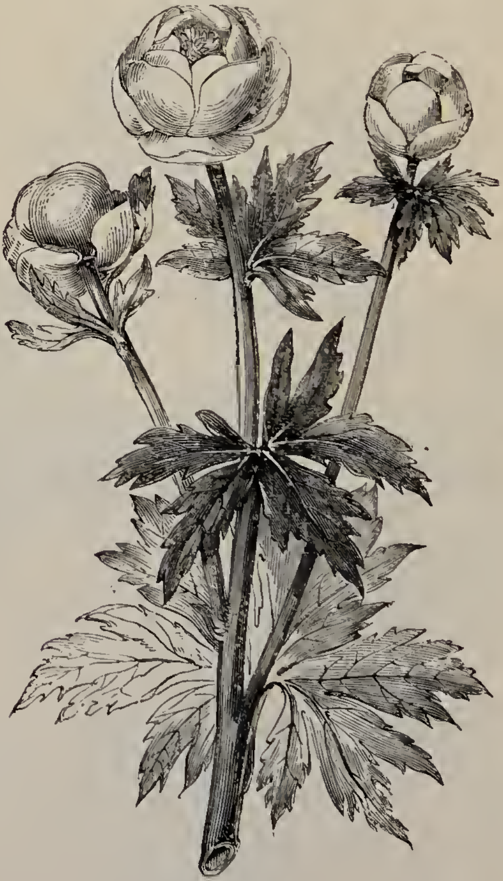
1. *C. palústris* (Marsh Marigold, Water Blobs).—A handsome plant, resembling a gigantic Buttercup, abundant in marshes and by the sides of streams. *Leaves* large, kidney-shaped, and glossy, with large membranous stipules; *flowers* 1—2 in. across; *sepals* golden-yellow.—Fl. March—May. Perennial.

8. TRÓLLIUS (Globe-flower).—Erect perennial herbs; *leaves* palmately lobed; *sepals* 5—15, petaloid, imbricate, concave; *petals* 5—15, narrow, clawed; *carpels* 5 or more, forming sessile follicles. (Name from the Scandinavian *troll*, a witch.)

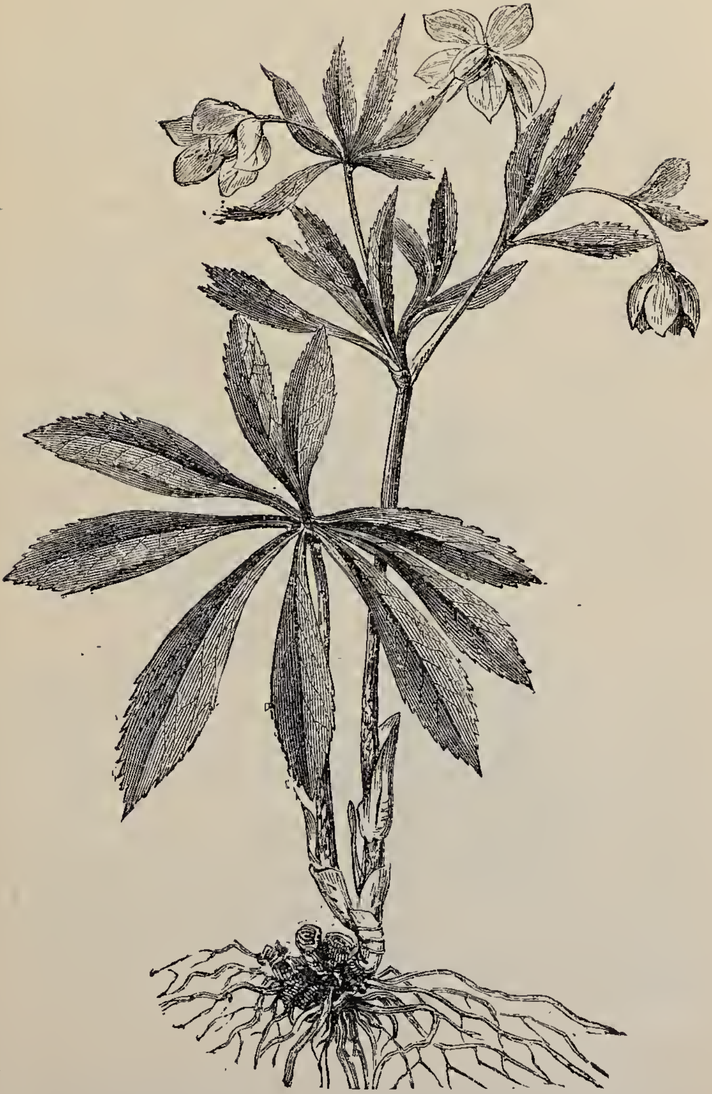
1. *T. europǽus* (Globe-flower, Witches' Gowan).—A large and handsome plant, 1—2 feet high, common in gardens, and growing wild in the mountainous parts of Scotland, Wales, and the North of England. *Sepals* orbicular, concave, converging into the form of

a globe, pale yellow; *petals* and *stamens* included.—Fl. June—August. Perennial.

9. Helléborus (Hellebore).—Perennial herbs; *leaves* palmately or pedately lobed; *sepals* 5, large, herbaceous, imbricate, persistent; petals 5—10, small, tubular, 2-lipped, clawed; *fruit* of 3—10 sessile



TRÓLLIUS (*Globe-flower*).



HELLÉBORUS VÍRIDIS (*Green Hellebore*).

follicles. (Name from the Greek *heléin*, to take away and *bóra*, food, from its use as an emetic.)

1. *H. víridis* (Green Hellebore, Bear's-foot).—A herbaceous perennial, about 1 foot high; *leaves* palmatisect, 5—7 lobed; *flowers* 1½—2 in. across; *sepals* green, spreading; *petals* containing honey, which is said to be poisonous.—Thickets on chalky soil.—Fl. March, April. Perennial.

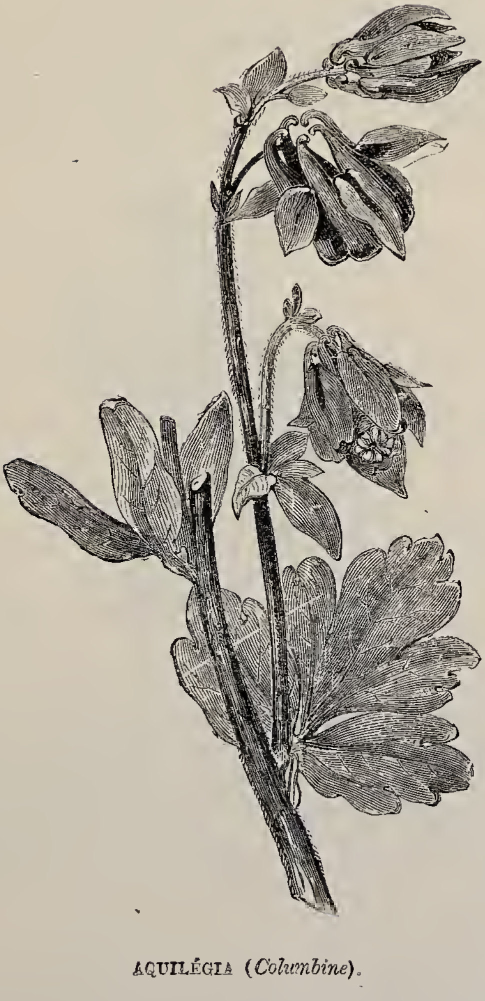
2. *H. fœ́tidus* (Stinking Hellebore, Setterwort).—*Stem* perennial, 1—2 feet high; *leaves* pedate; *flowers* 1 in. across, drooping; *sepals* green, tipped with dull purple, converging. Best distinguished from the preceding by its leaves, which are not divided to a common centre, and by the purplish hue of its sepals.—Thickets on chalky soil.—Fl. February—April. Perennial.

Both species are somewhat doubtful natives, generally found near houses. Small flies may sometimes be found caught in the honey of the tubular petals. *H. níger*, a handsome species, with large white or rose-coloured flowers, is the well-known Christmas Rose of our gardens.

*10. Eránthis (Winter Aconite).—A small perennial herb with a fleshy rhizome; *leaves* palmatisect; *flowers* solitary; *sepals* 5—8, deciduous, yellow; *petals* small, tubular, 2-lipped, with a long claw; *follicles* 5—6, stalked. (Name from the Greek *eros*, spring, and *ánthos*, flower.)

1.* *E. hyemális* (Winter Aconite).—*Stem* 4—6 in. high; leaves orbicular, deeply 3—7-lobed, glossy, lobes linear-oblong, obtuse; *involucre*, of sessile leafy bracts, just below the solitary, golden-yellow flower. —Common in gardens, and sometimes naturalised.—Fl. January—March. Perennial.

11. Aquilégia (Columbine).—An erect perennial herb; *leaves* 2—3-ternate; *flowers* handsome, 1—2



AQUILÉGIA (*Columbine*).

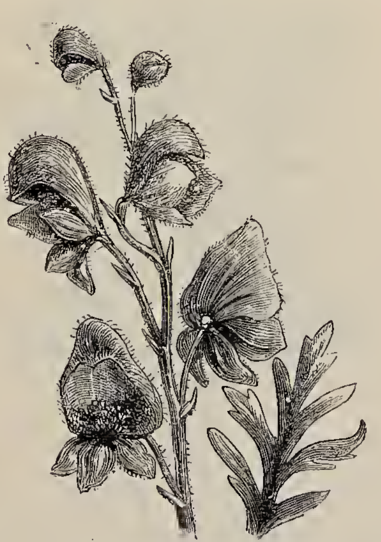
in. across; *sepals* 5, petaloid, deciduous; *petals* 5, each with a long spur; *follicles* 5. (Name from the Latin *aquila*, an eagle, the claws of which the spurs of the petals are supposed to resemble.)

1. *A. vulgáris* (Columbine).—The only British species, common in gardens, to which in spring it is very ornamental, with its delicate glaucous leaves; and no less so in summer, with its curiously-shaped and variously-coloured flowers. When growing wild, its flowers are usually blue, purple, or white. It may be distinguished from all other British flowers by having each of its five petals terminated in an incurved horn-like spur. It derives its name, Columbine, from the fancied resemblance of its flowers to a nest of doves, *columba* being Latin for a dove.—Woods and heaths.—Fl. May—July. Perennial.

DELPHÍNIUM (*Larkspur*).

*12 DELPHÍNIUM (Larkspur).—Erect herbs; *leaves* divided; *flowers* in racemes, monosymmetric; *sepals* 5, petaloid, deciduous, the posterior one with a long spur; *petals* 2—4, the two posterior ones spurred and enclosed within the spur of the calyx; *fruit* of 1—5 follicles. (Name from the Greek *délphis*, a dolphin, from a fancied resemblance in the form of the flower.)

1*. *D. Ajácis* (Larkspur).—About a foot high; *leaves* cut into many linear lobes; *flowers* 4—16 in a raceme, 1 in. across, blue, white, or pink; *fruit* of 1 pubescent follicle.—A doubtful native, though often in considerable quantity in sandy or chalky cornfields. —Fl. June, July. Annual. Several species are grown in gardens.



ACONÍTUM (*Monk's-hood*).

31. ACONÍTUM (Monk's-hood).—Erect perennial herbs; *leaves* palmately lobed; *flowers* racemose, monosymmetric; *sepals* 5, petaloid, deciduous, the

posterior one hooded; *petals* 2—5, the two posterior ones tubular, with long claws, enclosed within the hooded sepal; *follicles* 3—5. (Name classical, but of uncertain origin.)

1. *A. Napéllus* (Monk's-hood, Wolf's-bane).—1—2 feet high; *rhizome* fusiform, black; *leaf-lobes* pinnatifid; *raceme* unbranched; *flowers* 1—1½ in. across, purplish-blue. A common garden plant, remarkable for the curious structure of its flower, especially the hammer-like honey-containing petals enclosed under the hood. The name *Napéllus* is a diminutive of *napus*, the Latin for a turnip, from the shape of the rhizome; but the whole plant, and especially this rhizome, is very poisonous. It derives its name of Wolf's-bane from being used to poison the bait in wolf-traps.—Damp shady places.—Fl. June—September. Perennial.

ACTÆA (*Baneberry*).

14. Actæa (Baneberry).—Erect perennial herbs; *leaves* ternately compound; *flowers* small, in crowded racemes; *sepals* 3—5, petaloid, caducous; *petals* 4, minute, or absent; *fruit* of one, many-seeded carpel, berry-like. (Name from the Greek *acté*, the elder, from the similarity of the leaves of the two plants.)

PÆÓNIA (*Peony*).

1. *A. spicáta* (Baneberry, Herb Christopher).—The only British species, 1—2 feet high; *leaves* bi-ternately pinnate; *flowers* white; *fruit* black.—Woods on limestone in the North.—Fl. May. Perennial. Poisonous.

*15. Pæónia (Peony).—Perennial herbs or shrubs; *leaves* bi-ternate; *flowers* large; *sepals* 5, persistent; *petals* 5—10; *fruit* of 2—5 follicles. (Named from Pæon, the legendary physician, who cured the wounds of the gods in the Trojan war.)

1.* *P. corallína* (Peony).—A herb 2 feet high with fasciculate *roots*; *leaves* glaucous beneath; *flowers* crimson; *follicles* recurved, downy.—A cultivated plant, naturalised on Steep Holm, an island in the Severn.—Fl. May, June. Perennial.

ORD. II.—BERBERIDEÆ.—THE BARBERRY FAMILY.

Herbs or shrubs with scattered simple or compound *leaves* and polysymmetric *flowers*. *Sepals* 3, or 4 or 6 in two whorls, often petaloid. *Petals* either equal in number to the sepals and opposite to them, or twice as many, often with nectaries at their bases. *Stamens* equal in number to the petals, and opposite to them. *Anthers* opening by two valves turning upwards. *Carpel* 1, 1-chambered. *Seeds* 1 or more. Growing principally in mountainous parts of the temperate zones.

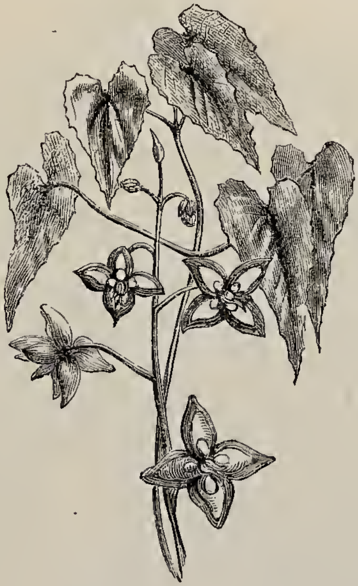
1. BÉRBERIS.—Spinous shrubs with yellow wood and astringent bark; *sepals* 6, deciduous; *petals* 6, each with 2 nectaries at the base; *stamens* 6; *fruit* berry-like, 1—3-seeded.

*2. EPIMÉDIUM.—*Sepals* 4, deciduous; *petals* 8, in two whorls, inner slipper-shaped; *stamens* 4; *fruit* a many-seeded follicle.

1. BÉRBERIS (Barberry).—*Leaves* spinously-dentate, or reduced to 3—7-fid spines; *flowers* in racemes, yellow, with 2 or 3 minute bracteoles. (Name said to be of Arabic origin.)

1. *B. vulgáris* (Barberry).—The only British species. A pretty shrub, not uncommon in woods and hedges, with yellow wood and 3-forked spines. Its yellow *flowers* hang in drooping clusters; the *filaments* are elastic and irritable, so that when touched ever so lightly by the legs of an insect they

spring upward and throw their pollen outward. The oblong berry-like *fruits* are orange-red when ripe and gratefully acid, and may be made into an agreeable preserve. The shrub is often rooted out by farmers as a fungus which lives part of its life on Barberry leaves is the cause of "rust" in wheat. Several species furnish a yellow dye, and others are cultivated in gardens, as are also several members of the allied genus *Mahónia.*—Fl. May, June. Perennial.



EPIMÉDIUM (*Barrenwort*).

*2. EPIMÉDIUM (Barrenwort).—*Leaves* bi-ternate; *flowers* red, with yellow, honey-bearing, inner petals. (Name of Greek origin, indicating its resemblance to a Median plant.)

1.* *E. alpinum* (Alpine Barrenwort).—A graceful plant, less than a foot high, occurring here and there in subalpine woods in Scotland and the North of England; but not indigenous. Its delicate green *leaflets* are ovate-cordate, acuminate and serrate.—Fl. May. Perennial.

ORD. III.—NYMPHÆÁCEÆ.—WATER-LILY FAMILY.

Perennial aquatic herbaceous plants, with generally orbicular floating *leaves* which are involute in vernation, and large, often fragrant, *flowers*. *Sepals* 3—6, gradually passing into *petals*, and these into *stamens*, both petals and stamens being inserted on a fleshy disk, which surrounds the ovary; *ovary* many-chambered, many-seeded, with a sessile, radiate *stigma*. The starchy rhizomes and seeds of some species are eaten.

Nelúmbium speciósum, the Sacred Lotus, with peltate leaves rising above the water, and its carpels imbedded separately on the upper surface of a funnel-shaped receptacle, though represented in ancient Egyptian art, is no longer found in the Nile, but is venerated by Buddhists throughout Eastern Asia. Another member of this order, *Victória régia*, a native of South America, one of the most beautiful of aquatic plants, produces blossoms 15 inches and leaves over 6 feet in diameter.

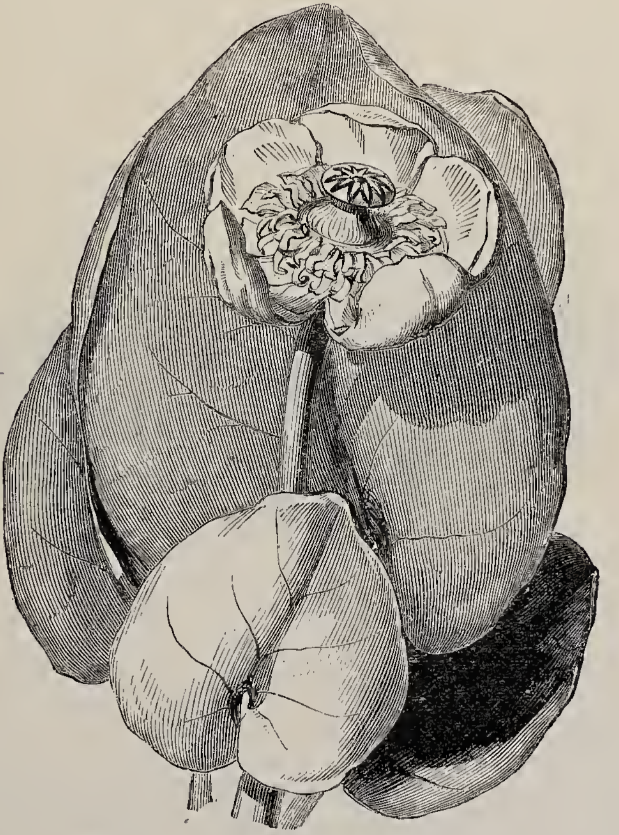
1. NYMPHÆA.—*Sepals* 5—6; *petals* many, small, hypogynous; *stamens* many, hypogynous.

2. CASTÁLIA.—*Sepals* 4; *petals* many, many-seriate, adnate to the disk; *stamens* many, adnate to the disk.

1. NYMPHÆA (Yellow Water-lily). — *Flowers* yellow, globose; *sepals* concave; *fruit* ovoid, fleshy, its carpels separating when ripe. (Named from its

growing in places which the nymphs were supposed to haunt.)

1. *N. lútea* (Common Yellow Water-lily, Brandy-bottle).—*Leaves* submerged and membranous, and



NYMPHÆA LÚTEA (*Common Yellow Water-lily*).

floating and leathery. *Flower* smelling like brandy, whence it is called Brandy-bottle. *Stigma* with 14—20 rays, not extending to its margin. Rivers and ditches, frequent. The Turks prepare a cooling drink from the flowers, which they call *Pufer* (a corruption of the Arabic name *Nuphar*).—Fl. July. Perennial.

2. *N. pumila* (Least Yellow Water-lily).—A much smaller plant, differing mainly in having only 8—10 stigmatic rays, which extend to its margin, forming acute teeth. It grows in several lakes in the Highlands and at Ellesmere, Shropshire.—Fl. July, August Perennial.

CASTÁLIA SPECIÓSA (*White Water-lily*).

2. CASTÁLIA (White Water-lily).—*Flowers* white, expanded; *fruit* ripening under water and dissolving into pulp. (Name from *Castália*, a spring on Mount Parnassus' the haunt of Apollo and the Muses.)

1. *C. speciósa* (White Water-lily).—Leaves all floating, 5—10 in. across; *sepals* green outside, white inside; *stigma* with 15—20 rays, yellow. The only

British species, and, perhaps, the most magnificent of our native flowers, inhabiting clear pools and slow rivers. The flowers rise above the water in the middle of the day and expand, closing once more and sinking towards evening.—Fl. June—August. Perennial.

Ord. IV. Papaveráceæ.—The Poppy Family.

Herbaceous plants, abounding in a milky narcotic juice. *Flowers* usually pendulous in the bud, conspicuous and polysymmetric; *sepals* 2, soon falling off, concave; *petals* 4, crumpled in æstivation; *stamens* indefinite, hypogynous; *fruit* a capsule; *seeds* generally scattered over the surface of incomplete partitions, which radiate from the sides of the capsule, but do not meet at the centre. The narcotic juice of the unripe capsules of *Papáver somníferum*, the Opium Poppy, which is commonly grown for ornament in our gardens, yields opium, laudanum, and morphia, most valuable medicines. An infusion of ripe "poppy-heads" or capsules is also used as a fomentation; and the seeds of all poppies contain a considerable quantity of a mild and wholesome oil.

Ovary of the Poppy.

* *Fruit a globose capsule, opening by pores.*

1. Papáver.—*Stigma* sessile, rayed; *capsule* open-

ing by pores below the stigma; *placentas* forming partial partitions.

2. MECONÓPSIS.—*Style* short; *stigma* of 4—6 rays; *capsule* opening by pores below the style; *placentas* less developed.

** *Fruit pod-like, opening by valves.*

3. GLAÚCIUM.—*Flower* yellow; *stigma* 2-lobed, sessile; *capsule* 2-valved and more or less completely 2-chambered.

4. RŒMÉRIA.—*Flower* violet; *stigma* 2—4 lobed, sessile; *capsule* 2—4 valved, 1-chambered.

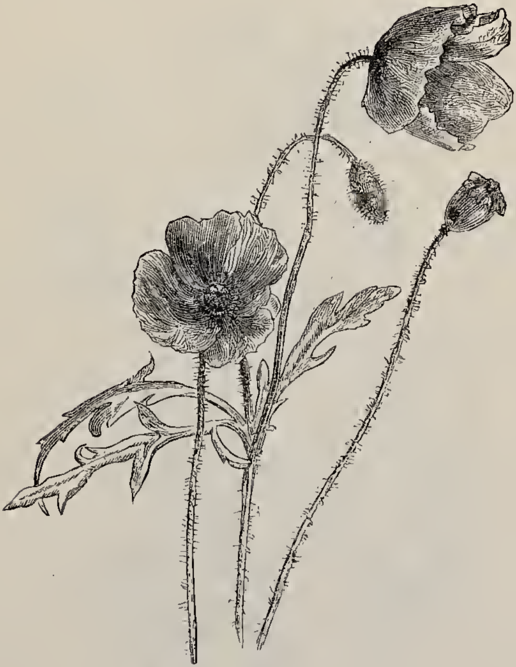
5. CHELIDÓNIUM.—*Flower* yellow; stigma 2-lobed; *capsule* 2-valved, 1-chambered.

1. PAPÁVER (Poppy).—Annual herbs with white milky juice. *Leaves* lobed or cut; *flowers* on long stalks, pendulous in the bud; *sepals* 2, caducous; *petals* 4, crumpled in the bud; *stamens* indefinite; *stigma* of 4—20 sessile rays on a disk, below which the pores open. (Name classical, of uncertain etymology, perhaps connected with the Keltic *papa*, pap, because administered to induce sleep.)

* *Capsules smooth.*

1.* *P. somníferum* (Opium Poppy).—Smooth with the exception of a few spreading bristles on the peduncle, glaucous; *leaves* amplexicaul; *flower* large, white, with a purple stain at the base of each petal; but of many other colours in garden varieties; *capsule* globular and smooth. Common in gardens and as an escape, but not indigenous. Opium is procured by puncturing the unripe capsules and collecting the juice which exudes and hardens. The seeds yield a wholesome oil, which is not narcotic.—Fl. July, August. Annual.

2. *P. Rhœas* (Common Poppy, Corn Rose). Hispid with spreading or adpressed hairs; *leaves* pinnatifid; *flowers* 3—4 in. across; *petals* deep scarlet, often black at the base; *capsule* nearly globular, smooth. Common in cornfields. (The name from the Greek *rhoia*, a pomegranate, which it resembles in its fruit.) —Fl. June, July. Annual.

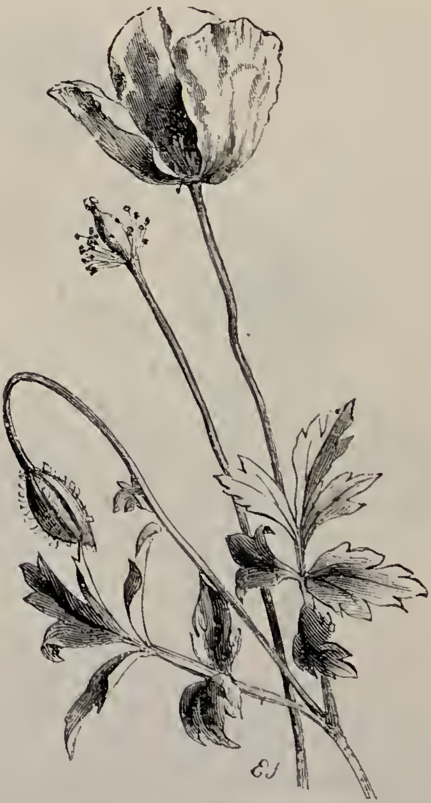


PAPAVER RHŒAS (*Common Red Poppy*).

3. *P. dúbium* (Long Smooth-headed Poppy).—Hispid with adpressed hairs; *leaves* pinnatifid; *flowers* large, scarlet; *petals* in unequal pairs; *capsule* obovoid, smooth.—In cultivated fields.—Fl. May—July. Annual.

*** Capsules bristly.*

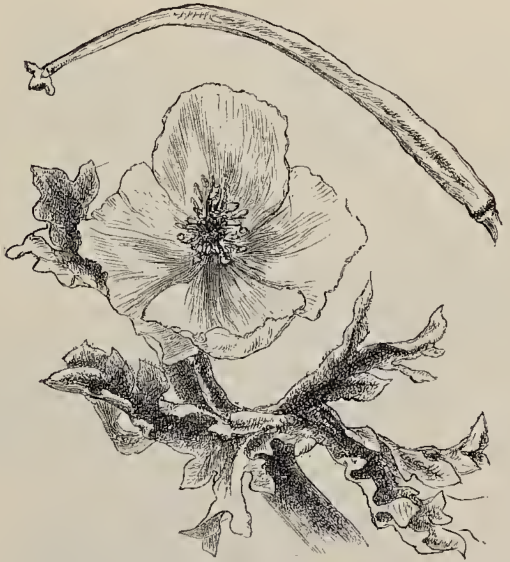
4. *P. Argemóne* (Long Rough-headed Poppy).—Hispid; *leaves* bipinnatifid; *flowers* less than 2 in. across; *petals* light scarlet, black at the base; *capsule*



MECONÓPSIS (*Welsh Poppy*).

club-shaped with erect bristles. The smallest British species, occurring sparingly in cornfields. (The name Argemóne, the Greek for Poppies, may be derived from *argima*, cataract, referring to a former medical use, or from *argos*, slothful, from their narcotic effects.)—Fl. May—July. Annual.

5. *P. hýbridum* (Round Rough-headed Poppy).—Hispid; *leaves* bipinnatifid; *flowers* 1—2 in. across; *petals* deep scarlet, often black at the base; *capsule* nearly globular, hispid with spreading bristles.—Sandy fields, not common. — Fl. May — July. Annual.



GLAUCIÚM (*Horned Poppy*).

2. MECONÓPSIS (Welsh Poppy).—Perennial herbs with yellow juice. *Leaves* pinnate; *flowers* on long stalks, pendulous in the bud; differing from *Papáver* in having a short, persistent *style*, and a *stigma* of 4—6 free-spreading lobes. (Name in Greek signifying bearing resemblance to a Poppy.)

1. *M. cámbrica* (Yellow Welsh Poppy).—The only British species, easily distinguished from any of the foregoing by its pale yellow flowers and juice of the same colour; and from the Horned Poppy by its slender growth, and green, not glaucous, foliage.—Rocky and shady places in the west.—Fl. June, July. Perennial.

3. Glaúcium (Horned Poppy).—Glaucous herbs with yellow juice. *Leaves* lobed or cut; *flowers* on long stalks; *carpels* 2, forming a long pod-like capsule; *stigma* 2-lobed. (Name from the *glaucous* hue of the foliage.)

1. *G. flávum* (Yellow Horned Poppy).—The only indigenous British species. *Leaves* wavy, embracing the stem; *pod* 6—12 in. long, curved, with minute tubercles. A handsome plant, conspicuous on the sea-shore from its hoary foliage, large golden-yellow flowers, and long pods, which might at first sight be mistaken for flower-stems bare of leaves.—Fl. June—August. Biennial.

2.* *G. phœníceum*, with scarlet petals, black at the base and hairy pods, only occurs occasionally as an escape.

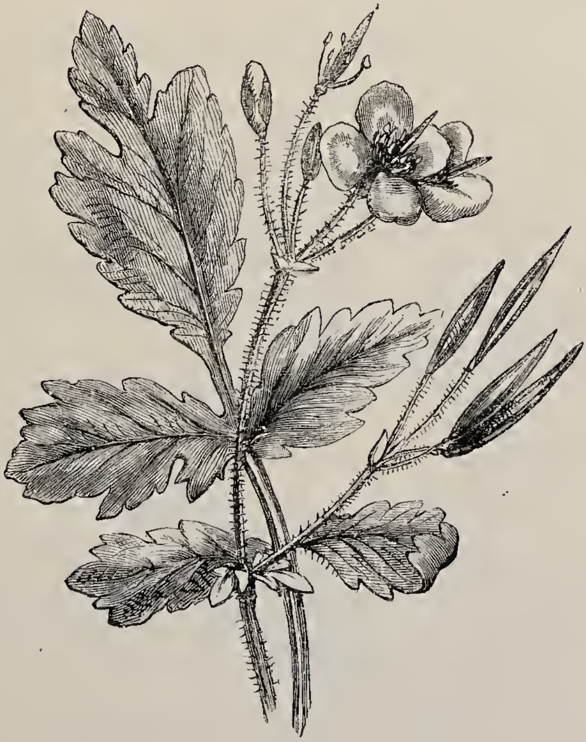
4. Rœméria (Violet Horned Poppy).—Annual herbs with yellow juice. *Leaves* pinnatifid; *flowers* violet, fugacious; *ovary* one-chambered; *fruit* pod-like. (Name from J. F. Rœmer, a German botanist.)

1. *R. hýbrida*, with a 3-valved capsule, 2—3 in. long, occurs rarely in dry cornfields in Cambridgeshire and Norfolk, and is probably not indigenous.

5. Chelidónium (Celandine).—Perennial herbs with yellow juice. *Leaves* pinnate; *flowers* yellow; *carpels* 2; *capsule* 1-chambered, pod-like, 2-valved. (Named from the Greek *chelídon*, a swallow, because, accord-

ing to Pliny, that bird discovered that its juice was efficacious in restoring sight to its young when blinded.)

1. *C. május* (Greater Celandine).—The only British species; not uncommon in waste places and village hedgerows. *Leaves* glaucous, imparipinnate and obtusely lobed; *flowers* in umbellate clusters, ¾—1 in. across; *capsule* 1½ in. long.—Fl. May—August, or as Pliny tells us, from the time of the arrival of the swallows until their departure. Perennial. The



CHELIDÓNIUM MAJUS (*Common Celandine*).

abundant orange-yellow juice is a violent acrid poison, but is a popular remedy for warts, and is said to have been used successfully in ophthalmia.

*The Lesser Celandine, *Ranúnculus Ficária* (see p. 19), bears little resemblance either in appearance or properties to this species.

ORD. V.—FUMARIÁCEÆ.—THE FUMITORY FAMILY.

Herbaceous plants with watery juice. *Leaves* divided; *flowers* in bracteate racemes, monosymmetric; *sepals* 2, small, deciduous; *petals* 4, usually in dissimilar pairs, the outer ones larger, and one or both swollen or spurred at the base, the inner ones partly coherent; *stamens* really 4, but apparently 6, diadelphous, each set consisting of one whole and two half (dimidiate) stamens; *carpels* 2; *ovary* 1-chambered; *seeds* crested.

1. NÉCKERA.—*Fruit* a compressed, 2-valved, many-seeded capsule.

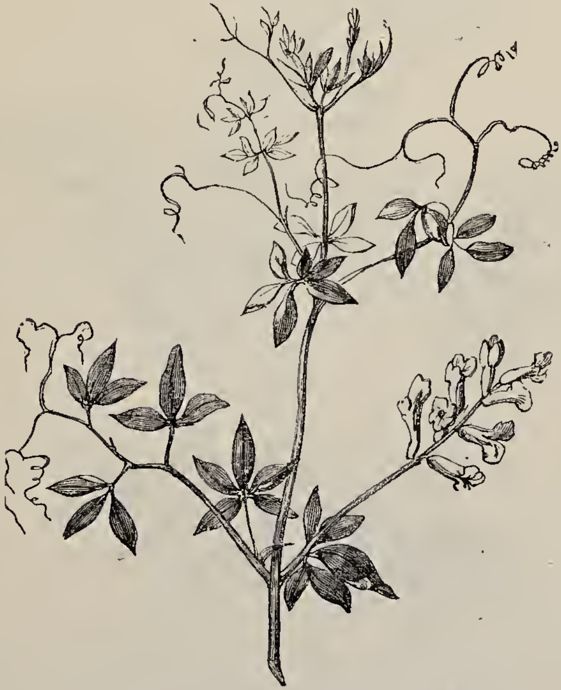
2. FUMÁRIA. — *Fruit* a globose, indehiscent, 1-seeded achene.

1. NÉCKERA (Corydalis). — Herbs with much divided glabrous *leaves* and bracteate racemes of small monosymmetric *flowers*; *petals* connivent; the upper one spurred; *capsule* many-seeded. (Name from Noël Joseph Necker.)

1. *N. claviculáta* (Climbing Corydalis). — *Stem* slender, climbing; *leaves* glaucous, pinnate, ending in branched tendrils; *flowers* yellowish-white; *spur* very short. A clambering plant, with delicate green stems and foliage, rising to the height of several feet, by the help of the bushes among which it grows. The only indigenous species.—Fl. June—August. Annual. (The Greek name *Corýdalis* was employed for this or some allied plant by Galen.)

* Two other species are naturalised in Britain: *N. bulbósa*, a perennial with a tuberous rhizome, unbranched aërial stem, no tendrils and purple flowers, and *N. lútea*, not uncommon on old walls, with many short stems, no tendrils and bright yellow flowers.

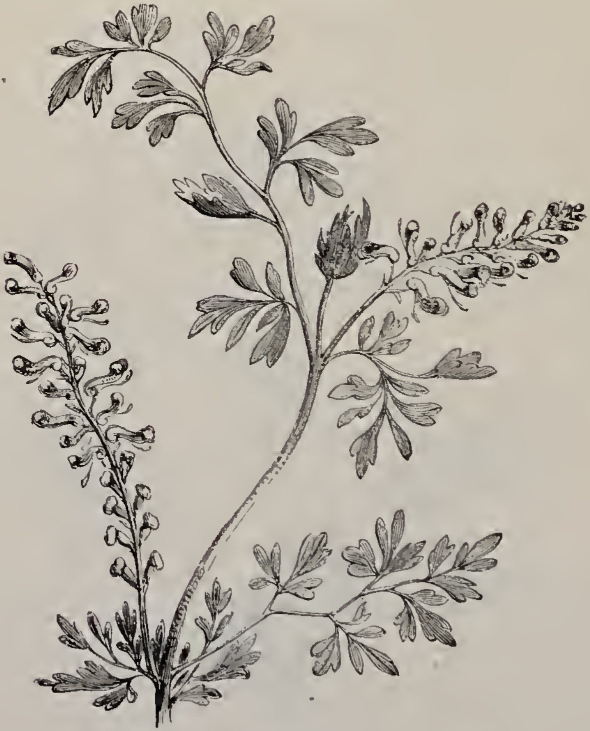
2. Fumária (Fumitory).—Annual herbs differing little from *Néckera* except in having only two ovules in the ovary, only one of which forms a seed in the indehiscent fruit. (Name from the Latin *fumus terræ*, smoke of the earth, these smoke-like glaucous weeds



NÉCKERA CLAVICULÁTA (*Climbing Corydalis*).

being supposed to spring without seed from the vapours of the ground.)

1. *F. capreoláta* (Ramping Fumitory).—Generally climbing by means of its twisted leaf-stalks, 1—2 feet high ; *flowers* pale pink or cream-coloured, tipped with crimson in short, few-flowered racemes ; *sepals* as broad



FUMÁRIA OFFICINÁLIS (*Common Fumitory*).

as the corolla and half as long ; *fruit* globose, slightly compressed, smooth. Including four forms known as *F. pallidiflóra*, *F. Borǽi*, *F. confúsa* and *F. murális*, differing mainly in the form of the fruit. Borders of fields ; common.—Fl. May—September. Annual.

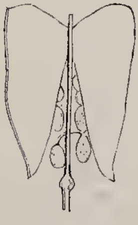
2. *F. officinális* (Common Fumitory). — Erect,

smaller than *F. capreoláta; leaves* more divided; *flowers* smaller, rose-coloured, tipped with crimson, in long, many-flowered racemes; *sepals* narrower than the corolla; *fruit* obovate, notched.—Fl. May—September. Annual.

* *F. densiflóra*, a weaker plant with short racemes, elongating after flowering, and roundish sepals, broader than the corolla; *F. parviflóra*, with small pale flower in dense racemes, with minute sepals; and *F. Vaillántii*, with lax racemes, are less common species.

ORD. VI.—CRUCÍFERÆ.—THE CABBAGE FAMILY.

A very large, very natural, and very important Order, well described by the name *Crucíferæ*, or cross-bearing, there being invariably 4 *petals*, which are placed crosswise. They are mostly herbs with a watery juice and pungent taste. The *leaves* are radical and cauline, the former in a rosette; the latter scattered and exstipulate. The *flowers* are in an ebracteate raceme. There are 4 *sepals*, the two lateral ones often pouched at the base; 4 *petals*, placed diagonally; and 6 *stamens*, in 2 whorls, the two outer, opposite the lateral (pouched) sepals, shorter, the 4 inner longer, whence Linnæus classed all the members of this Order in his class



Silicle of Shepherd's Purse.

Tetradynámia (see p. xxii.). There are usually 4 honey-secreting glands on the receptacle, one in front of each sepal. There are two *carpels*, united to form a dry pod-like fruit. This is generally compressed and dehisces by valves, when if elongated it is termed a *siliqua*, if short and broad, a *silicle*. A partition, or *septum*, dividing it into two chambers crosses its interior, either parallel with the valves, *i.e.*, across the longer transverse diameter (*latisept*), or at right angles with them (*angustisept*). In some genera the pod is divided into several transverse, 1-seeded joints, when it is termed a *lomentum*. The *seeds* are small, exalbuminous, and oily. Their relatively large *cotyledons* are variously placed with reference to the *radicle* or primary embryonic root, this root being either *incumbent*, or folded against the back of one cotyledon, or *accumbent*, folded against the edges of both. The plants of this Order are rich in nitrogen and sulphur, and have an unpleasant odour when boiling or rotting. In a wild state they are almost always pungent and even acrid; but none of them are poisonous, and many of them have valuable stimulant properties, besides their use in medicine as antiscorbutics, or remedies against scurvy. Under cultivation many of them become more succulent and form some of our most useful vegetables, such as the cabbage, turnip, radish, cress, and sea-kale. There are at least 1,200 species, mostly natives of the temperate zone, chiefly in the Old World. They form a considerable proportion of the vegetation of Arctic latitudes.

Sub-order I. Siliquósæ. Fruit a latisept siliqua.

Tribe 1. Arabídeæ. Cotyledons accumbent.

** Stigma 2-lobed.*

1. MATHÍOLA.—*Stigma* of two erect lobes; *flowers* large, lilac or violet.

*2. Cheiránthus.—*Stigma* of two spreading lobes; *flowers* large, yellow; *pod* compressed with two prominent longitudinal ribs.

** *Stigma small, undivided.*

3. Nastúrtium.—*Calyx* spreading; *pod* cylindric; *valves* convex; *seeds* minute, 2-seriate.

4. Barbaréa.—*Calyx* erect; *pod* 4-angled; *seeds* 1-seriate.

5. Árabis.—*Pod* linear, flat, obtuse; *valves* with one longitudinal rib or several veins, not elastic.

6. Cardaminé.—*Pod* flat; *valves* veinless, separating with an elastic spring; *seeds* 1-seriate.

Tribe 2. Sísymbrieæ. Seeds 1-seriate; cotyledons incumbent.

*7. Hésperis.—*Stigma* 2-lobed, decurrent; *pod* 4-angled; *valves* keeled, 3-veined; *hairs* spreading.

8. Sisýmbrium.—*Stigma* undivided; *pod* cylindric or 4-angled; *valves* convex, 1—3-veined; *hairs* spreading, or absent.

9. Erýsimum.—*Stigma* undivided, or notched; *pod* 4-angled; *valves* keeled, 1-veined; *hairs* adpressed, forked.

Tribe 3. Brássiceæ. Cotyledons incumbent, folded longitudinally; flowers yellow.

10. Brássica.—*Pod* nearly cylindric; *seeds* 1-seriate.

11. Diplotáxis.—*Pod* compressed; *seeds* 2-seriate.

Sub-order II. Latiséptæ. Fruit a latisept silicle.

Tribe 4. Alyssíneæ. Cotyledons accumbent.

*12. Alýssum.—*Petals* entire; *pod* roundish, compressed, few-seeded.

13. DRÁBA.—*Petals* entire; *pod* oval or oblong, compressed; *seeds* numerous, 2-seriate.

14. EROPHÍLA.—*Petals* 2-cleft; *pod* oval or oblong, compressed or turgid; *seeds* numerous, 2-seriate.

15. COCHLEÁRIA.—*Petals* entire; *pod* globose or nearly so; *valves* very convex, keeled; *seeds* numerous, 2-seriate.

Tribe 5. *Camelíneæ. Cotyledons incumbent.*

*16. CAMELÍNA.—A tall herb, with cauline *leaves*, sessile, auricled; *pod* ovate, inflated, beaked; *style* persistent.

17. SUBULÁRIA.—A small aquatic plant; *leaves* subulate; *pod* oval-oblong; *valves* boat-shaped; *seeds* numerous.

Sub-order III. Angustiséptæ. Fruit an angustisept silicle.

Tribe 6. *Lepidíneæ. Cotyledons incumbent; flowers white.*

18. BÚRSA.—*Pod* inversely heart-shaped, flat; *valves* boat-shaped, keeled; *seeds* many.

19. CORONÓPUS.—*Pod* reniform, 2-lobed, indehiscent, 2-seeded.

20. LEPÍDIUM.—*Pod* roundish, compressed, keeled, 2—4-seeded.

Tribe 7. *Thlaspídeæ. Cotyledons accumbent; flowers white.*

21. THLÁSPI.—*Petals* equal; *pod* rounded, flat, notched; *valves* boat-shaped, winged at the back; *seeds* numerous.

22. IBÉRIS.—*Petals* unequal; *pod* ovate, notched; *valves* boat-shaped, winged at the back; *seeds* 2.

23. Teesdália.—*Petals* unequal; *pod* roundish, notched; *valves* boat-shaped, keeled; *seeds* 4.

24. Hutchínsia.—*Petals* equal; *pod* elliptic, entire; *valves* boat-shaped, keeled; *seeds* 4.

Sub-order IV. Lomentáceæ. Fruit indehiscent or lomentaceous.

Tribe 8. *Isatídeæ. Pod indehiscent,* 1-*chambered,* 1-*seeded; cotyledons incumbent.*

*25. Ísatis.—*Pod* compressed; *valves* keeled.

Tribe 9. *Cakilíneæ. Lomentum* 2-*jointed.*

26. Crámbé.—Lower joint seedless; upper 1-seeded.

27. Cakílé.—Each joint 1-seeded.

Tribe 10. *Rapháneæ. Lomentum tapering or moniliform, many-seeded.*

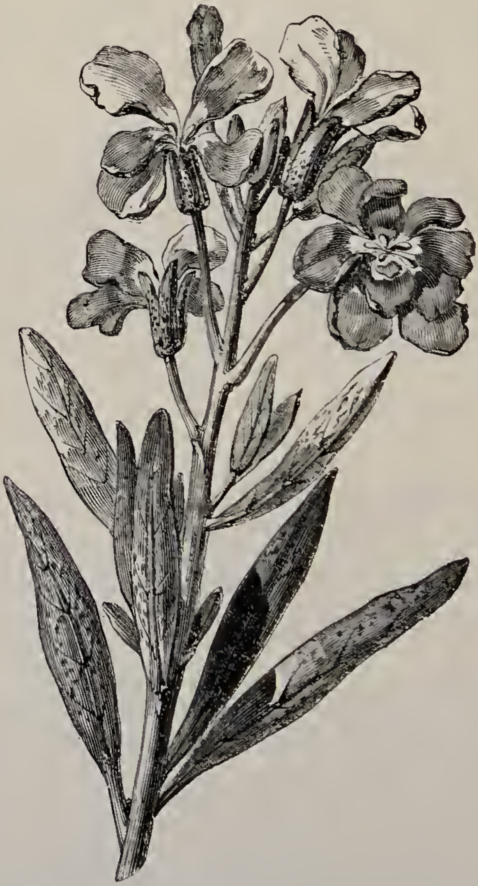
28. Ráphanus.—*Pod* smooth, inflated; *style* persisting as a beak.

1. Mathíola (Stock).—Herbs, sometimes shrubby, downy with stellate hairs; *sepals* erect; *petals* with long claws; *seeds* winged. (Named in honour of Matthiolus an Italian physician.)

1. *M. sinuáta* (Great Sea Stock).—*Stem* herbaceous, spreading 1—2 feet; *leaves* oblong, downy, the lower ones sinuate-toothed; *flowers* 1 in. across, purple, fragrant by night; *pods* rough, glandular. —South and south-west coasts.—Fl. May—August. Biennial.

2. *M. incána* (Hoary Shrubby Stock).—*Stem*

shrubby, erect, branched, 1—2 feet, hoary; *leaves* lanceolate, generally entire, hoary; *flowers* 1—2 in. across, purple; *pods* eglandular.—Cliffs in the Isle of

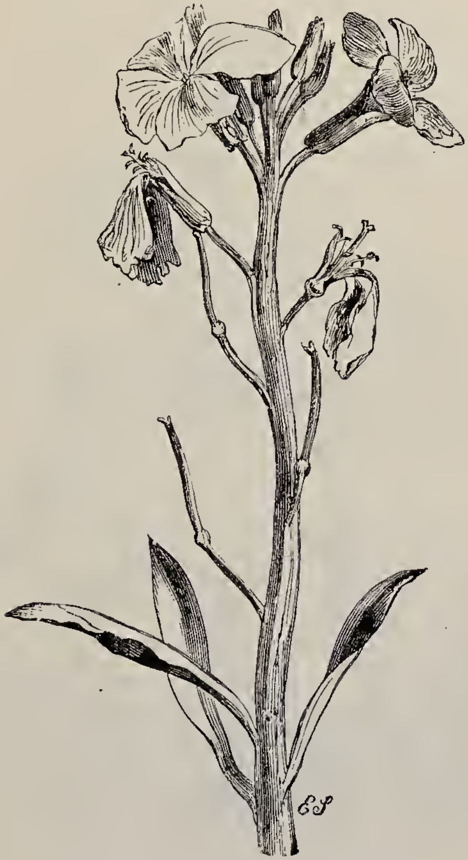


MATHÍOLA INCÁNA (*Hoary Shrubby Stock*).

Wight.—Fl. May, June. Perennial. The "Queen Stock" of gardens.

*2. Cheiránthus (Wallflower).—Herbs, sometimes shrubby, pubescent with adpressed bipartite hairs; *sepals* erect; *petals* with long claws; *seeds* compressed. (Name said to be of Arabic origin.)

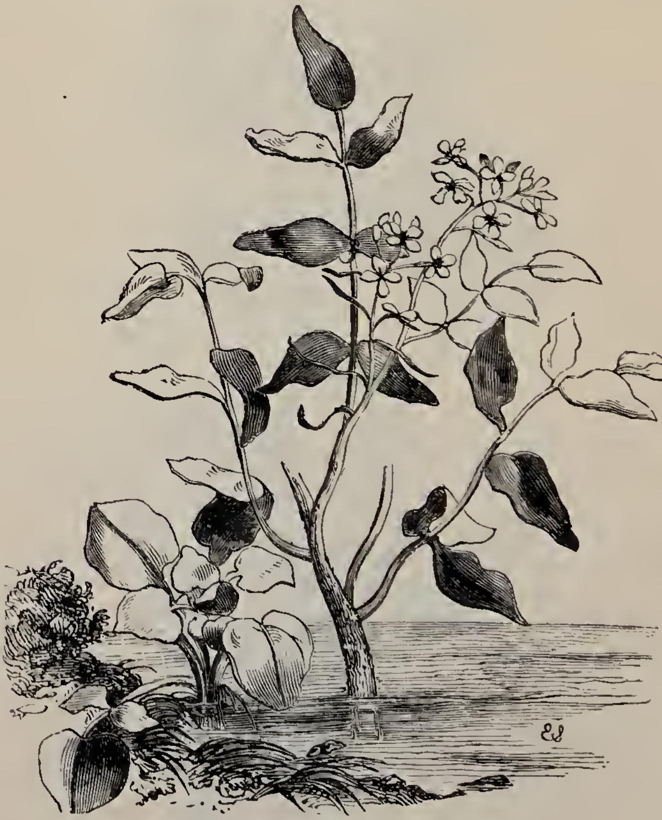
1.* *C. Cheíri* (Wallflower).—*Stem* shrubby; *leaves* lanceolate, acute, entire; *flowers* 1 in. across, yellow, fragrant; *pods* 4-angled.—Not indigenous; but naturalised on many old walls.—Fl. April—June.



CHEIRÁNTHUS CHEÍRI (*Wallflower*).

Biennial. Many varieties, with red and brown flowers, are cultivated in gardens.

3. Nastúrtium (Watercress).—Glabrous, mostly aquatic herbs; *flowers* small, yellow or white; *sepals* spreading; *petals* with short claws. (Name from *nasus tortus*, a distorted nose, on account of the pungent properties of the genus. The possession of



NASTÚRTIUM OFFICINÁLÉ (*Common Watercress*).

similar properties caused a widely dissimilar plant, the *Tropæolum* of our gardens, to be also originally called Nasturtium.)

* *Flowers white.*

1. *N. officinálé* (Common Watercress).—*Leaves* pinnate; *leaflets* 7—13, ovate or oblong, sub-cordate, sinuate-dentate, glabrous.—Abundant in rivulets and extensively cultivated as a salad. The only plant likely to be mistaken for it by watercress gatherers, *Ápium nodiflórum* (see p. 298), has hollow leaf-stalks. and serrated leaflets, which watercress has not.—Fl. May—October. Perennial.

** *Flowers yellow.*

2. *N. sylvéstré* (Creeping Yellow Cress).—*Rhizome* creeping; *leaves* deeply pinnatifid; *leaf-segments* lanceolate; *flowers* minute; *petals* twice as long as the calyx; *pods* linear.—Watery places.—Fl. June—September. Perennial.

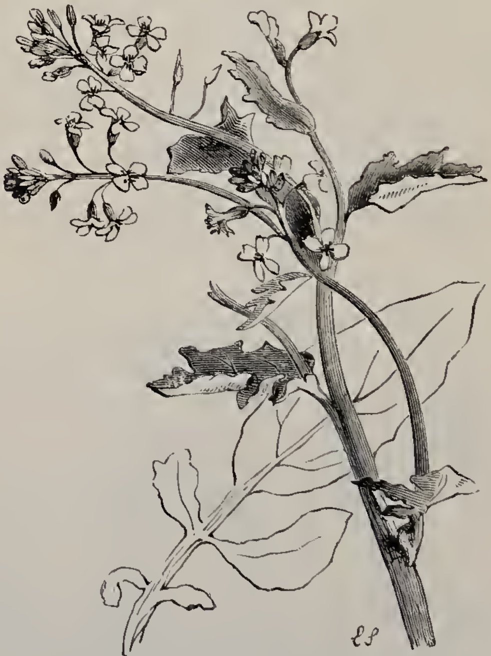
3. *N. palústré* (Marsh Yellow Cress).—*Root* fibrous; *leaves* lyrate, pinnatifid; *flowers* $\frac{1}{8}$ in. across; *petals* not longer than calyx; *pods* oblong.—Watery places.—Fl. June—October.

4. *N. amphíbium* (Amphibious Yellow Cress).—*Roots* fibrous; *rhizome* short, stoloniferous; *leaves* pinnatifid or deeply serrate; *petals* twice as long as the calyx; *pods* short and broad.—A large plant, 2—4 feet high, growing on the banks of rivers, or partly submerged, remarkable for its numerous runners or stolons.—Fl. June—September. Perennial.

4. BARBARÉA (Winter Cress).—Erect, branched, glabrous, biennial herbs; *stem* angular; *petals* yellow,

clawed; *pods* straight, stiff, 4-angled, acuminate. (Dedicated to St. Barbara.)

1. *B. vulgáris* (Common Winter Cress).—*Lower leaves* lyrately pinnate, the terminal lobe roundish; *upper*, obovate, toothed; *raceme* lax; *flowers* small.—Common in moist waste ground, where it may be readily recognised by its smooth, shining, dark green *leaves*, and its erect, angular stem, bearing numerous bright yellow *flowers*. Three forms, differing chiefly in the size of their petals and the direction of their pods, are distinguished as *B. arcuáta*, *B. stricta*, and *B. intermédia*.—A variety with double flowers is



BARBARÉA VULGÁRIS (*Common Winter Cress*).

frequent in gardens under the name of Yellow Rocket.—Fl. May—August. Biennial.

2.* *B. præcox* (American Cress), differing in a more slender habit, narrower *leaves*, larger *flowers* in a closer raceme and longer *pods*, and flowering earlier, is a common garden escape, being grown as a salad.

5. Árabis (Rock Cress).—Herbs growing in dry places, mostly local in Britain; *radical leaves* spathulate; *flowers* small; *sepals* short; *petals* clawed; *pods* linear, compressed, keeled, not elastic. (Name from Arabia, the native country of several of the species.)

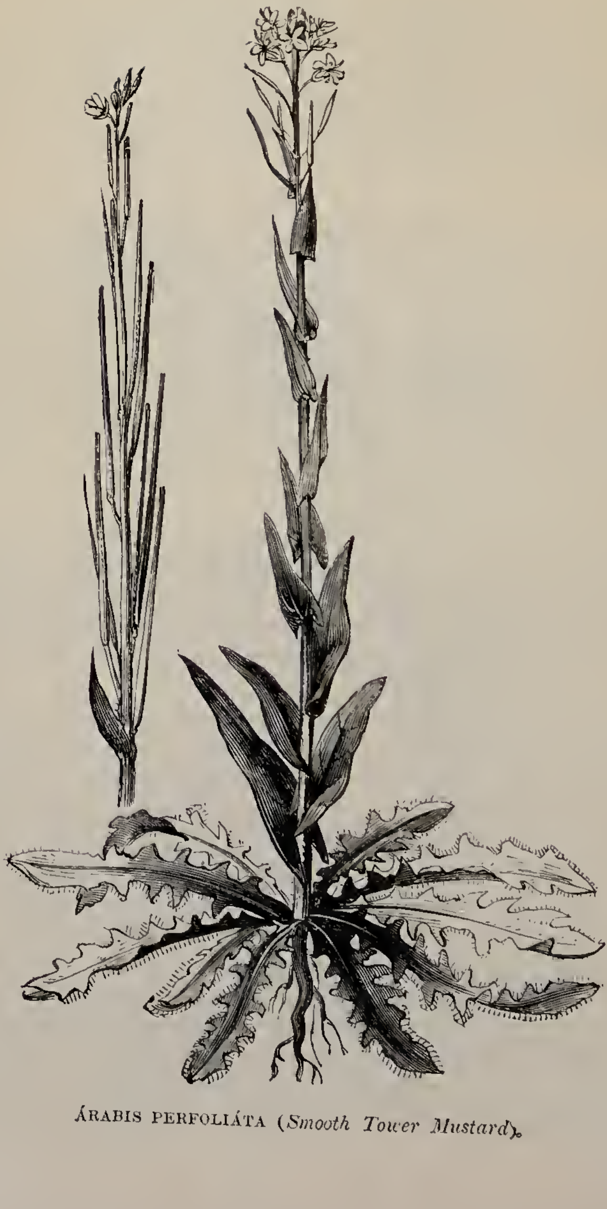
1. *A. alpina* (Alpine Rock Cress).—A low-growing plant, with its *cauline leaves* downy with branched hairs, lanceolate, acute, amplexicaul, toothed, and its *pods* erect, on spreading hairy stalks, occurs in the Isle of Skye. Perennial.

2. *A. petrǽa* (Mountain Rock Cress).—Generally glabrous; *stem* 3—8 in. high, branched below; *radical leaves* lyrately pinnatifid; *cauline leaves* subentire, stalked; *flowers* corymbose, white, tinged with purple.—On rocks in Wales and Scotland.—Fl. June —August. Perennial.

3. *A. stricta* (Bristol Rock Cress), with hispid, sinuate-dentate *radical leaves*, sessile *cauline leaves* and cream-coloured *flowers*, grows on limestone rocks at Bristol and Cheddar.—Fl. March—May. Perennial.

4. *A. ciliáta* (Ciliate Rock Cress), with *leaves* smooth on both sides, but fringed with forked hairs at the edges, and white *flowers*, grows on rocks by the sea near Tenby, and in the South and West of Ireland. —Fl. July, August. Perennial.

5. *A. hirsúta* (Hairy Rock Cress).—Hispid; *stems* many, about 1 foot high, with numerous *cauline leaves*, heart-shaped at the base and amplexicaul; *flowers* small, white. A stiff, erect plant, frequent on walls and banks.—Fl. June—August. Biennial.



ÁRABIS PERFOLIÁTA (*Smooth Tower Mustard*).

6.* *A. Turrita* (Hairy Tower Mustard), naturalised, but very rare, on old walls, chiefly at Oxford and Cambridge, has an erect *stem*, over a foot high, with forked hairs, amplexicaul *cauline leaves*, and bracteate yellow *flowers.*—Fl. May—July. Perennial.

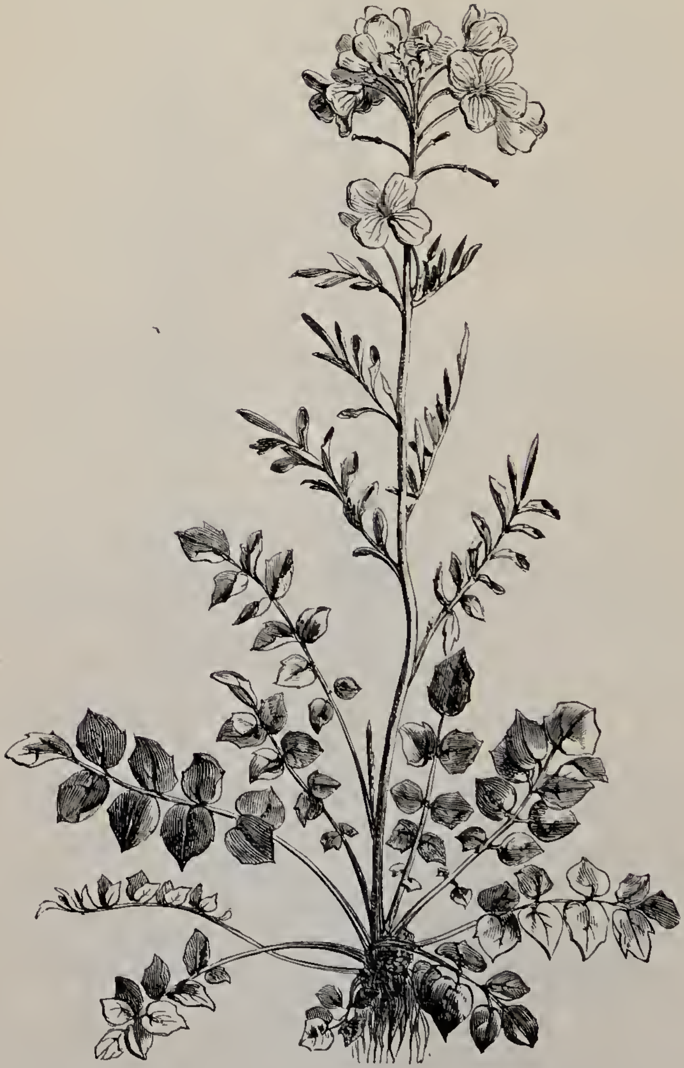
7. *A. perfoliáta* (Smooth Tower Mustard).—Erect, glaucous; *stem* 1—2 feet high, unbranched; *radical leaves*, toothed, hairy, and soon withering; *cauline leaves* glabrous, triangular, entire, auricled; *flowers* pale yellow.—It grows on banks and cliffs; but is local.—Fl. May—July. Biennial.

6. CARDAMÍNÉ (Bitter Cress).—Bitter herbs, mostly widely distributed, glabrous; *leaves* pinnate; *flowers* conspicuous, either individually or from corymbose arrangement; *pods* linear, compressed, elastic. (Name from the Greek *kardia*, the heart, *damao*, I overpower, from the supposed properties of the genus.)

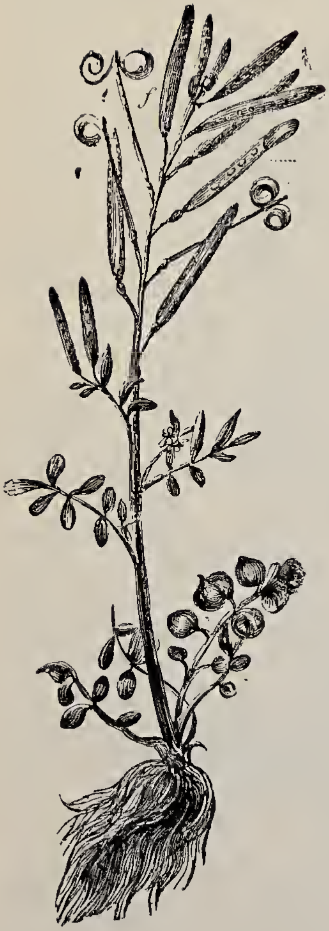
1. *C. amára* (Large-flowered Bitter Cress).—*Stem* 1—2 feet high, with runners; *leaves* pinnate; *leaflets* angular, those of the radical leaves roundish, those of the cauline leaves oblong; *flowers* ½ in. across; *petals* white; *anthers* purple.—River-sides; not common.—Fl. April—June. Perennial.

2. *C. praténsis* (Lady's Smock, Cuckoo Flower).—Stem about a foot high; *leaves* pinnate; *leaflets* of radical leaves roundish, angular, those of the cauline leaves linear-lanceolate; *flowers* ½—¾ in. across; *petals* lilac or white; *anthers* yellow.—Moist meadows; a familiar spring favourite. A variety is sometimes found wild, which is remarkably proliferous, the leaflets, and even the leaves of the flower, producing buds when they come in contact with the ground.—Fl. April—June. Perennial.

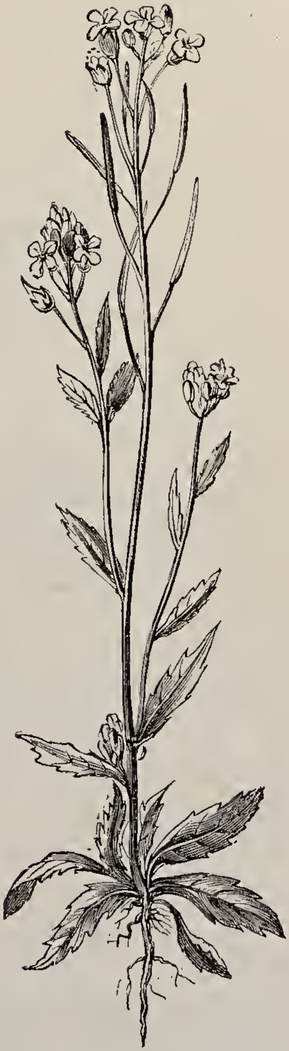
3. *C. hirsúta* (Hairy Bitter Cress).—*Stem* erect, with few leaves; *leaves* similar to those of *C. praténsis*, sometimes hairy; *flowers* very small, white; *stamens*



CARDAMÍNÉ PRATÉNSIS (*Cuckoo Flower, or Lady's Smock*).



CARDAMÍNÉ HIRSÚTA
(*Hairy Bitter Cress*).



SISÝMBRIUM THALIÁNUM, p. 60.
(*Thale Cress*).

only four; *anthers* yellow.—A common weed everywhere, varying in size according to soil and situation, from 6—18 in. in height. In dry localities it ripens its seeds in April, or even in March, and withers away; but in damper places continues in flower all the summer. The very small white flowers are soon overtopped by the lengthening pods, the valves of which, when ripe, curl up elastically, scattering the seeds to a considerable distance.—Fl. March—August. Annual.

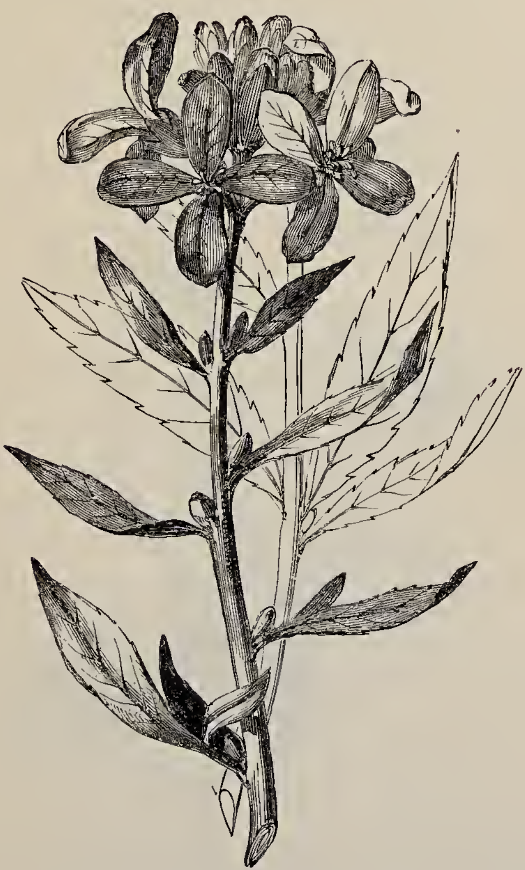
4. *C. flexuósa* (Wavy Bitter Cress).—Almost equally common, differs in having a more wavy and more leafy *stem*, and usually six *stamens* and a longer *style.*—Shady places.—Fl. April—September. Biennial or perennial.

5. *C. impátiens* (Narrow-leaved Bitter Cress).—A stout, erect, glabrous, leafy plant; *leaves* with fringed stipule-like auricles; *leaflets* narrow; *flowers* ¼ in. across, white.—Moist rocks, chiefly limestone; rare. —Fl. May—August. Annual.

6. *C. bulbífera* (Bulbiferous Coral-root).—An erect, unbranched plant, with *lower leaves* pinnate, *upper leaves* simple, lanceolate, serrate, or entire, easily distinguished from any other British plant in the Order by its rose-coloured or purple *flowers*, ½—¾ in. across, the white, tooth-like knobs on its *rhizome*, and the dark purple *bulbils* in the axils of the upper leaves.—Shady places, chiefly in the South-east of England; rare.—Fl. April—June. Perennial.

*7. HÉSPERIS (Dame's Violet).—Erect, stout, leafy plants; *leaves* simple; *flowers* large; *sepals* erect, lateral pair gibbous; *petals* clawed; *pods* long, slender, cylindric, constricted between the seeds. (Name from the Greek *hésp̆eros*, evening, from its being fragrant in the evening.)

1.* *H. matronális* (Dame's Violet) is a garden escape, with ovate-lanceolate, serrate, acuminate *leaves*, and white or lilac *flowers*, $\frac{3}{4}$ in. across.—Fl. April—July. Biennial.



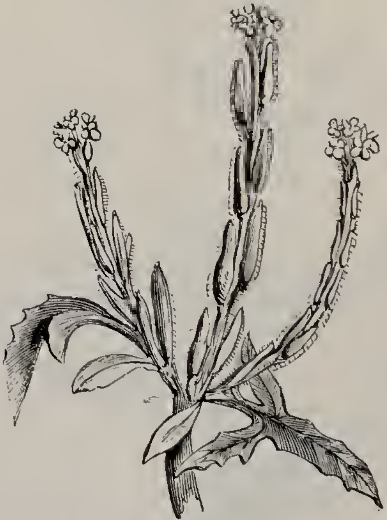
CARDAMÍNÉ BULBÍFERA (*Bulbiferous Coral-root*).

8. SISÝMBRIUM (Hedge - mustard).—Annual or biennial herbs, with unbranched hairs or none; *flowers*

in lax racemes, generally yellow; *pods* narrow, linear. (Name of Greek origin.)

1. *S. Thaliánum* (Thale Cress or Wall Cress).—*Stem* erect, slender, 6—10 in. high, branched; *leaves* mostly radical, simple, oblong-lanceolate, serrate, pubescent; *flowers* minute, white; *pods* linear, obscurely four-angled, ascending, twice as long as their stalks.—Common on dry banks and walls.—Fl. April —October. Annual.

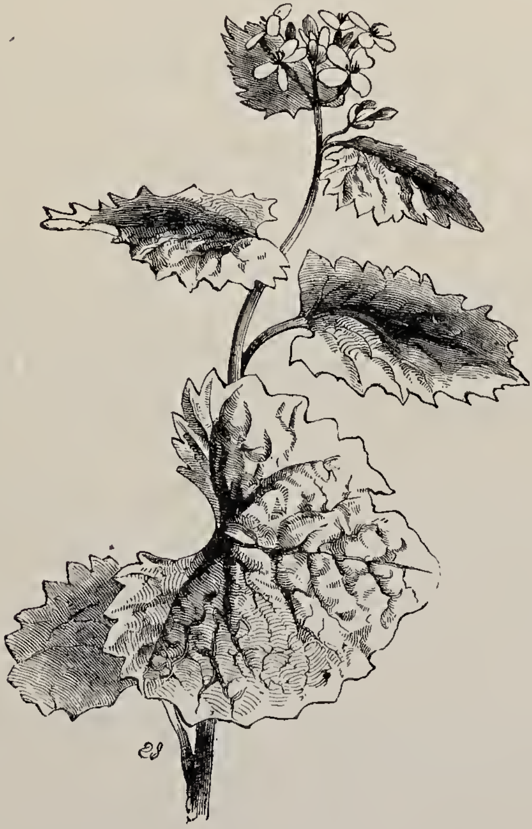
2. *S. officinálé* (Common Hedge-mustard).—*Stem*



SISYMBRIUM OFFICINÁLÉ (*Common Hedge-mustard*).

1—2 feet high, rough; *branches* horizontal; *leaves* hairy, deeply lobed, with the points turned backward (runcinate), the terminal lobe large; *flowers* small, yellow; *pods* downy, closely pressed to the stem, subulate.—It grows in waste places and by roadsides, where it seems to have a peculiar aptitude for collecting and retaining dust.—Fl. June, July. Annual.

3. *S. Sóphia* (Flixweed).—Downy; *stem* slender, erect, branched; *leaves* twice pinnatifid, segments narrow, linear; *flowers* small, greenish yellow; *petals* shorter than the calyx; *pods* terete, narrow, constricted between the numerous seeds.—Waste places; not uncommon.—Fl. June—August. Annual. By the old herbalists it was called *Sóphia chirurgórum*,



SISÝMBRIUM ALLIÁRIA (*Garlic Mustard*).

"Wisdom of surgeons," from its use in healing wounds.

4. *S. Írio* (London Rocket).—Glabrous; *stem* erect, branched; *leaves* runcinate, dentate; *flowers* small, yellow; *pods* narrow, linear, four times as long as their stalks.—A leafy plant about 2 feet high, occurring in waste ground near old towns, but rare. It is known as London Rocket because it covered the ground in the spring after the Great Fire of 1666.—Fl. July, August. Annual.

5. *S. Alliária* (Garlic Mustard, Jack-by-the-Hedge, or Sauce-alone).—*Stem* erect, slightly branched, 1—2 feet high; *leaves* broadly heart-shaped, stalked, coarsely toothed, with prominent veins; *flowers* ¼ in. across, white, corymbose; *pods* 2½ in. long.—Hedgerows; common.—Fl. April—June. Annual. An early flowering and attractive hedge-plant, with delicate green leaves and snow-white flowers; but the whole plant emits, when gathered, a nauseous scent of garlic. It was formerly used as a sauce.

Two other species are naturalised, *S. polycerátium*; a prostrate form with *flowers* and *pods* in threes in the axils of *bracts*, growing near Bury St. Edmunds; and *S. pannónicum*, near Crosley, Lancashire, with runcinate *leaves*, spreading *sepals*, and *pedicels* nearly as thick as the *pods*.

9. Erýsimum (Treacle-mustard). — Hoary herbs, with adpressed forked hairs; *leaves* simple, without auricles; *pods* narrow, linear, compressed; *valves* keeled, 1-veined. (Name from the Greek *ěruo*, I draw blisters.)

1. *E. cheiranthoídes* (Worm-seed, Treacle-mustard). —*Stem* erect, branched, 1 to 2 feet high; *leaves* lanceolate, acute, slightly toothed, with three-forked hairs, dull green; *flowers* small, yellow; *sepals* whitish; *pods* 1 in. long, erect, on short-spreading

stalks.—Generally in cultivated ground; uncommon. —Fl. June—August. Annual.

2.* *E. perfoliátum* (Hare's-ear Treacle-mustard), with glaucous oval *leaves* and cream-coloured *flowers*, occurs as an escape.—Fl. May—July. Annual.

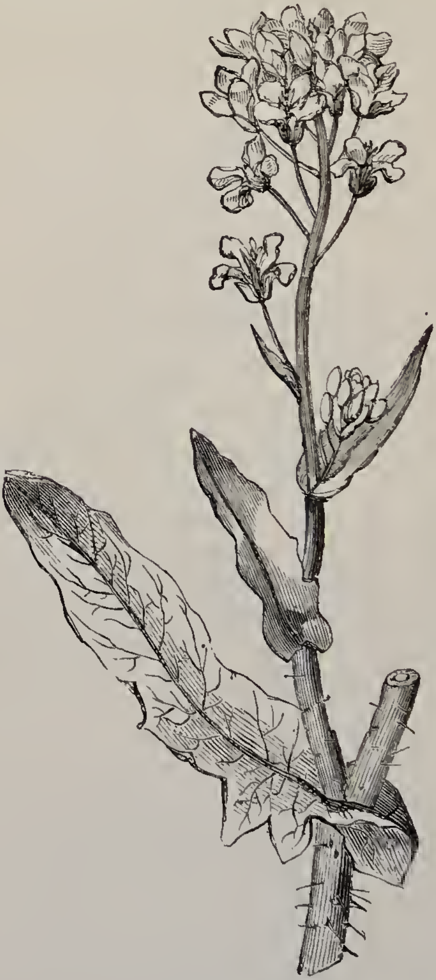
10. BRASSICA (Cabbage, Mustard, &c).—Herbs, with long racemes of conspicuous *flowers*, and long, nearly cylindric *pods* and *seeds* in one row. (Name, the Latin name for cabbage.)

* *Sepals erect.*

1. *B. olerácea* (Wild Cabbage).—*Rhizome* stout, branched; *branches* usually decumbent, tortuous, fleshy; *leaves* glabrous, glaucous, obtuse, often a foot across; *racemes* elongated; *flowers* 1 in. across, pale yellow; *pods* 2—3 in. long, beak subulate.—Sea-cliffs in the south and west.—Fl. May—August. Biennial. The original of all the varieties of garden cabbage, including broccoli, cauliflower, kohl-rabi, &c.

2. *B. campéstris* (Navew).—A group-name for a series of weeds occurring in cultivated ground, probably not wild, according to Sir Joseph Hooker, "in this or any other country."—*Radical leaves* lyrately-pinnate, dentate; *cauline leaves* ovate-lanceolate, acute, auricled, amplexicaul; *racemes* corymbose.—Fl. June—September. This group includes *B. Nápus* (Rape or Cole-seed), with a fusiform *root*, and all its *leaves* glabrous and glaucous, and yellow *flowers*, which is cultivated for the sake of the Colza and Carcel oil pressed from its seeds, the refuse being used, under the name of oilcake, for feeding cattle; *B. Rutabága* (Swede), with a turnip-shaped *root* and all its *leaves* glaucous, the radical ones hispid and the cauline ones glabrous, and buff *flowers*, the roots of which are used as cattle-food; and *B. Rápa* (Turnip),

with turnip-shaped *root, lower leaves* hispid but not glaucous, *upper leaves* glaucous and glabrous, and



BRÁSSICA CAMPÉSTRIS (*Common Wild Navew*).

bright yellow *flowers,* which is perhaps the most truly wild and ancestral form.

3. *B. monénsis* (Isle of Man Cabbage).—*Rhizome* stout, woody; *stem* 6—24 in. high, usually prostrate; *leaves* mostly radical, glabrous, deeply pinnatifid; *flowers* bright lemon-yellow, veined with purple. —Sandy sea-shores on the west coast of Britain; rare. —Fl. May—August. Perennial.

4. *B. Cheiránthus* (Jersey Cabbage) is an allied species, found in the Channel Islands, differing in having an erect leafy *stem*, 1—3 feet high and hispid *leaves*.

** *Sepals spreading.*

5. *B. Sinapioídes* (Black Mustard).—*Stem* 2—3 feet high, branched, hispid; *lower leaves* large, rough, lyrate; *upper leaves* linear-lanceolate, stalked glabrous; *flowers* $\frac{1}{3}$—$\frac{1}{2}$ in. across, yellow; *pods* erect, adpressed, 4-angled, glabrous, beak short, subulate.—Fl. June —August. Annual. Its seeds yield table mustard.

6. *B. adpréssa*, growing in sandy places in the Channel Islands, is more branched and has very short pods.

7. *B. Sinapístrum* (Wild Mustard, Charlock).—Hispid; *leaves* lyrately pinnatifid, rough; *flowers* sub-corymbose, $\frac{1}{2}$—$\frac{3}{4}$ in. across, bright yellow; *pods* spreading, linear, many-angled, generally hispid, $1\frac{1}{2}$—2 in. long, constricted.—A common weed in cornfields, sometimes springing up in profusion from recently disturbed ground, though previously unknown there.—Fl. May—August. Annual.

8. *B. alba* (White Mustard).—Hispid with reflexed hairs; *flowers* $\frac{1}{2}$ in. across, yellow; *pods* spreading, 2 in. long, hispid, with a flat, two-edged, sword-like beak.—Waste ground.—Fl. June, July. Annual. Seedlings of this species are largely eaten, with those of Cress (*Lepídium satívum*), as salad.

11. Diplotáxis (Rocket) has spreading *sepals*; but

differs from the mustards in its flattened *pods* with membranous valves and *seeds* in two rows. (Name from the Greek *diplos*, double, *taxis*, rank or row.)

1. *D. tenuifólia* (Wall Rocket).—Slender, branched, 1—2 feet high; *stem* woody below; *leaves* deeply divided into long narrow segments, glaucous; *flowers* $\frac{3}{4}$ in. across, light yellow, fragrant; *pods* short, linear, erect, on very long slender stalks.—On old walls.—Fl. June—September. Perennial.

BRÁSSICA SINAPÍSTRUM (*Wild Mustard, Charlock*).

2. *D. murális* (Sand Rocket), a less branched, hispid, herbaceous, and generally annual species, grows in waste ground, especially near the sea.

*12. Alyssum, a genus of small plants, mostly hoary with adpressed hairs, with simple *leaves*, small white or yellow *flowers*, and rounded, few-seeded *pods*, includes three alien species, sometimes naturalised: *A. incánum*, *A. calycínum*, with stellate *hairs*; yellow *flowers*; and persistent *sepals*; and *A. marítimum*, with bi-partite *hairs*; white, sweet-scented *flowers*, and deciduous *sepals*.

13. Drába (Whitlow-grass).—Small herbs, mostly perennial and hoary with stellate hairs; *leaves* small, simple, the radical ones in a rosette; *flowers* small, white or yellow; *pods* compressed. (Name from the Greek *drabé*, acrid.)

* *Flowers white.*

1. *D. murális* (Speedwell-leaved Whitlow-grass).—*Stem* leafy, branched, about a foot high; *leaves* rough, with stellate hairs, egg-shaped, blunt, toothed, embracing the stem; *pedicels* spreading horizontally.—Limestone hills in the West of England; rare.—Fl. April, May. Annual.

2. *D. incána* (Twisted Whitlow-grass).—*Stem* leafy, branched, 4—14 in. high; *leaves* hoary with stellate down, lanceolate, toothed; *pods* twisted.—Mountains, and sandhills near the sea; uncommon.—Fl. June, July. Perennial.

3. *D. rupéstris* (Rock Whitlow-grass).—*Stems* several, 1—2 in. high, almost leafless; *leaves* rosulate, stellately pubescent, ciliate.—In crevices of the rocks and among moss on the summits of some Highland mountains; very rare.—Fl. July, August. Perennial.

** *Flowers yellow.*

4. *D. aïzöides* (Yellow Alpine Whitlow-grass).—

Stem leafless, 1—5 in. high; *leaves* rosulate, linear, glabrous, ciliate; *petals* slightly notched.—On rocks and walls at Pennard Castle, near Swansea, where it forms dense tufts with bright yellow *flowers.*—Fl. March—May. Perennial.

14. Eróphila (Vernal Whitlow-grass). — Small herbs with simple rosulate, hairy *radical leaves;* slender leafless *scapes; flowers* minute; *petals* deeply bi-lobed, white. (Name from the Greek *ĕros*, spring, *philo*, I love.)

ERÓPHILA VULGÁRIS (*Vernal Whitlow-grass*).

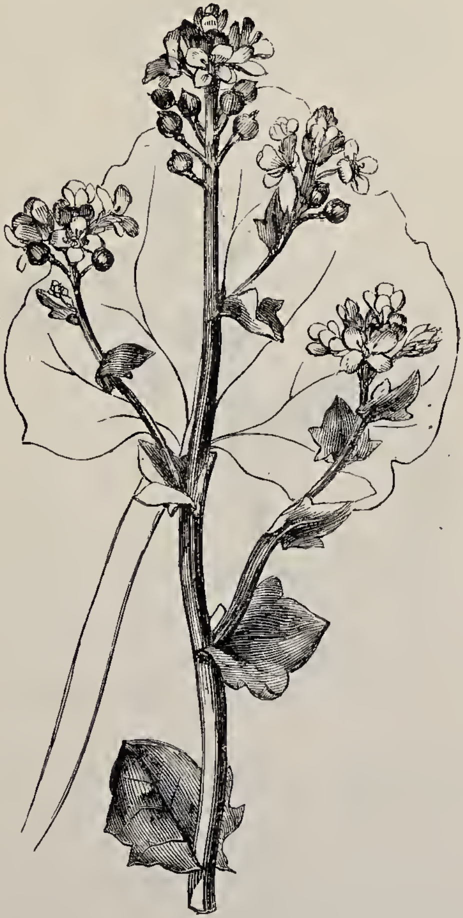
1. *E. vulgáris* (Long-podded Whitlow-grass).—*Pods* compressed, twice as long as broad.—Common on wall and dry banks.—Fl. February—May. Annual.

2. *E. prǽcox* (Short-podded Whitlow-grass).—*Pods* compressed, orbicular. A less common form.

3. *E. infláta*, found on Ben Lawers, has inflated seed-pods, twice as long as broad.—Fl. June, July.

15. Cochleária (Scurvy-grass).—Glabrous herbs,

with simple, often fleshy *leaves;* small white *flowers;* and nearly globose *pods.* (Name from the Latin *cochlear,* a spoon, from the shape of the leaves in



COCHLEÁRIA OFFICINÁLIS (*Common Scurvy-grass*).

some species.) The plants of this genus derive their English name from the relief which they afford to sailors suffering from scurvy, in consequence of their being debarred from the use of fresh vegetables. This antiscorbutic quality is shared to an equal degree by other plants of the Order; but these were most readily available from growing near the sea. Steam navigation and the consequent shortening of voyages, preserved vegetables, and the use of lime-juice have, however, rendered this dreadful disease much less common.

COCHLEÁRIA DÁNICA (*Danish Scurvy Grass*).

* *Valves of the pod with prominent dorsal veins.*

1. *C. officinális* (Common Scurvy-grass).—*Stem* often much branched, 10 in. high; *radical leaves* stalked, orbicular or reniform, cordate; *cauline leaves* amplexicaul, lobed; *flowers* in rather large corymbs;

pod nearly globose.—On muddy sea-shores; common. —Fl. May, June. Annual.

2. *C. alpína* (Alpine Scurvy Grass).—A smaller form with an obovoid *pod.*—On lofty mountains.

3. *C. dánica* (Danish Scurvy Grass).—Another small form, with stalked, deltoid *leaves* and an ovate *pod.*—Cliffs and hedges near the sea; common.—Fl. March—August. Biennial.

4. *C. ánglica* (English Scurvy Grass).—*Branches* 10—18 in. long; *radical leaves* not cordate, fleshy; *flowers* and *pods* larger than in *C. officinális*, the latter somewhat elongate, nearly ½ in. in length.—Muddy sea-shores; common.—Fl. May—August. Annual.

Two other small species allied to *C. dánica*, *C. grœnlándica*, with fleshy *leaves*, and *C. micácea*, a perennial with long claws to its relatively large *petals*, are found in the North of Scotland.

** *Valves of the pod without dorsal veins.*

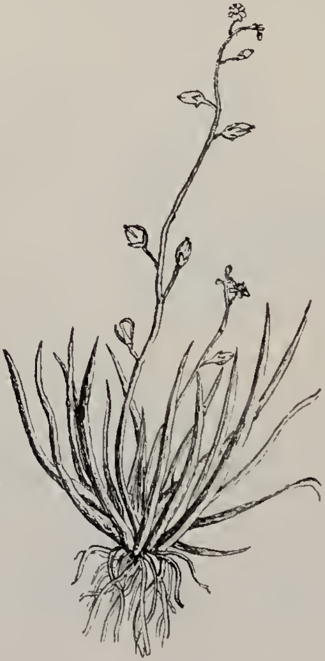
5.* *C. Armorácia* (Horse-radish).—*Rhizome* stout, long, cylindric, white and pungent; *branches* 2—3 feet high; *radical leaves* 8—12 in. long, on stalks a foot long, oblong, wavy, crenate; *cauline leaves* subsessile, lanceolate, serrate; *flowers* small; *pods* not ripening in England.—Waste-ground; a common escape from kitchen gardens; but not indigenous.—Fl. May—June. Perennial.

*16. Camelína satíva (Gold of Pleasure) is another escape from cultivation. It has tall, slender *stems;* with obtuse, auricled *cauline leaves;* small yellow *flowers* and obovoid inflated *pods.*—Fl. June, July. Annual. (Name from the Greek *chamai*, dwarf, *linon*, flax.) The plant is cultivated for the oil in its seeds.

17. Subulária (Awl-wort).—A small submerged

aquatic herb; *leaves* all radical, subulate (awl-shaped); *flowers* few, small, white, on a scape, 1—3 in. long, sometimes perfected under water. (Name from the Latin *subula*, an awl.)

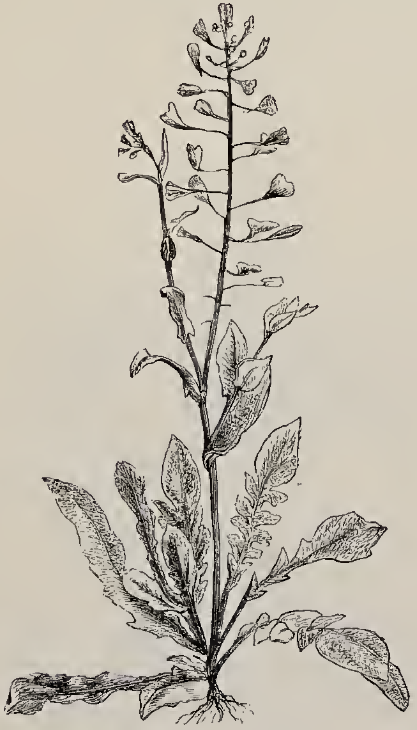
1. *S. aquática* (Water Awl-wort).—The only species, common on the gravelly bottoms of mountain lakes. —Fl. June—August. Perennial.



SUBULÁRIA AQUÁTICA (*Water Awl-wort*).

18. BÚRSA (Shepherd's Purse).—Annual herbs, *flowers* small, white; *pedicels* slender; *pods* compressed, inversely heart-shaped; *valves* boat-shaped, keeled, but not winged. (Name, the Latin for a purse.)

1. *B. pastóris* (Common Shepherd's Purse).—A common weed, to be found in almost every part of the world, varying considerably in size, and the division of its leaves. The whole plant is more or less rough with branched hairs; *root* tapering; *stem* 6—16 in. high, branched; *radical leaves* pinnatifid; *cauline leaves* auricled; *petals* sometimes converted into stamens.—Fl. nearly all the year round. Annual.

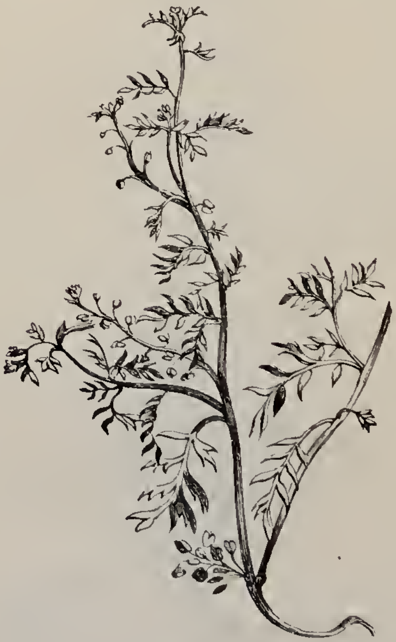


BÚRSA PASTÓRIS (*Common Shepherd's Purse*).

19. Corónopus (Wart-cress).—Branched, prostrate

herbs; *flowers* minute, white, in short lateral racemes; *pods* reniform, indehiscent, or splitting into two indehiscent lobes; *seeds* one in each lobe. (Name from the Greek *korónos*, a raven, *pous*, foot.)

1. *C. dídymus* (Lesser Wart-cress).—*Stem* prostrate, branched, slender, hairy, a foot or more in length; *leaves* finely pinnatifid or bi-pinnatifid; *pods* separating into two hard, wrinkled lobes. Waste-ground near the sea in the south-west. It emits a very powerful smell, like that of Pepper-cress, especially when trodden on, or in hot weather; and has a particularly nauseous taste.—Fl. July—September. Annual.



CORÓNOPUS DÍDYMUS (*Lesser Wart-cress*).

2. *C. Ruéllii* (Wart-cress or Swine's-cress).—Gla-

brous, less branched and with larger, less divided *leaves* and larger *pods* than *C. dídymus.* The pods are indehiscent. A common roadside weed.—Fl. June—September. Annual.

20. Lepídium (Pepperwort).—Herbs with small white *flowers;* some of the *petals* or *stamens* often absent; *pods* rounded or obcordate, much compressed, generally 2-seeded; *valves* keeled or winged. (Name from the Greek *lépis,* a scale, from the flattened pods.)

* *Style minute.*

1. *L. latifólium* (Broad-leaved Pepperwort, Dittander).—The largest British species, glabrous and glaucous; *stem* 2—4 feet high, erect, much branched, leafy, with runners; *radical leaves* stalked, ovate, lanceolate, serrate, often a foot long; *cauline leaves* sessile, lanceolate; *flowers* numerous, small, white, in leafy panicles; *pods* oval, not notched or winged, downy.—In salt marshes; rare.—Fl. July, August. Perennial.

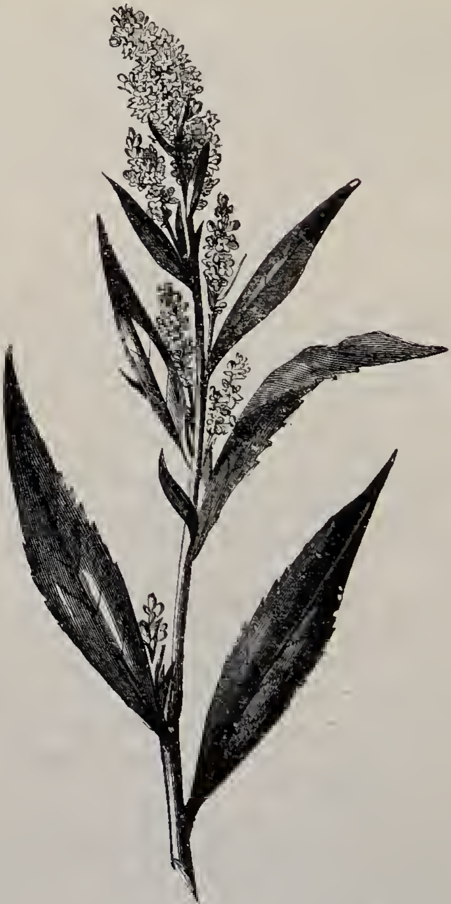
2. *L. ruderálé* (Narrow-leaved Pepperwort).—A smaller plant, glabrous or slightly pubescent; *stem* a foot high, branched; *radical leaves* pinnatifid with narrow segments; *cauline leaves* linear, entire; *petals* absent; *stamens* 2; *pod* oval, notched, winged at the top.—Waste places near the sea; uncommon.—Fl. May, June. Annual.

3.* *L. satívum* (Common Cress).—A similar plant, occurring as an escape from cultivation; *pod* more completely winged. Annual.

** *Style distinct.*

4. *L. campéstré* (Field Pepperwort).—Pubescent;

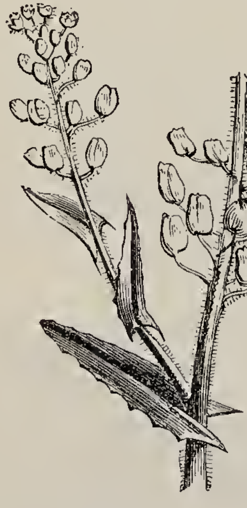
stem 6—18 in. high, erect, slightly branched ; *leaves* hoary, *upper ones* arrow-shaped at the base ; *anthers* yellow ; *pod* rough with minute scales ; *style* not longer than the notch in the pod. A common weed. —Fl. May—August. Annual or biennial.



LEPÍDIUM LATIFÓLIUM (*Broad-leaved Pepperwort*).

5. *L. hírtum* (Hairy Pepperwort).—More downy, more woody, and more branched; *anthers* violet; *pod* less scaly; *style* much longer than the notch. As common as *L. campéstré.*—Fl. April—August. Perennial.

6.* *L. Drába.*—*Stem* flexuous, leafy, a foot in height, branched; *leaves* hoary, oblong, *lower ones* stalked, *upper ones* arrow-shaped at the base; *flowers* many, small, corymbose, long-stalked; *pod* cordate, constricted between the valves; *valves* swollen; *style* slender. Not indigenous.—Fl. May—June. Perennial.

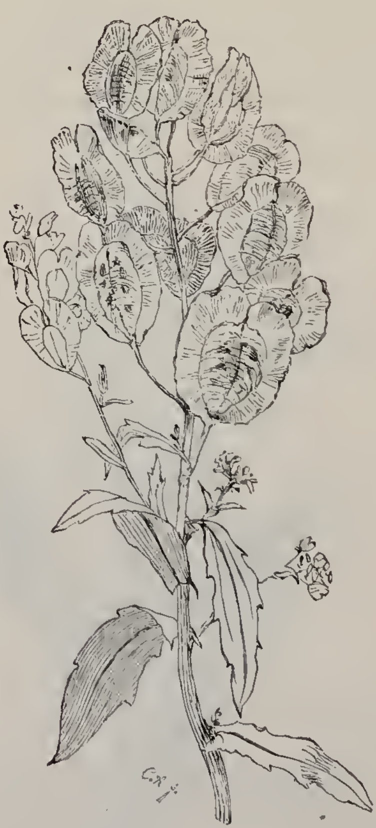


LEPÍDIUM CAMPÉSTRÉ (*Field Pepperwort*).

21. Thláspi (Penny Cress). — Glabrous herbs; *radical leaves* rosulate; *cauline leaves* sessile, sagittate; *flowers* small, white; *petals* equal, obovate; *pod* rounded, flat, notched; *valves* boat-shaped, winged;

seeds numerous. (Name, the old Greek name of the genus, connected with *thlao*, I flatten.)

1. *T. arvénsé* (Mithridate Mustard, Penny Cress).—*Stem* slender, erect, a foot high; *cauline leaves* oblong,



THLÁSPI ARVÉNSÉ (*Penny Cress*).

sagittate, toothed; *flowers* much smaller than the pods, in a lengthening raceme; *pods* round, flat, with very broad wings, and a deep notch, ½—¾ in. across.—Fields; frequent. It derives its popular names from the resemblance of its seed-vessels in size and shape to silver pennies, and from having formerly been used in a medicine known as the Mithridate confection.—Fl. all the summer. Annual.

2. *T. perfoliátum* (Perfoliate Penny Cress).—A smaller, much-branched species; *stem-leaves* sessile, oblong, heart-shaped at the base, amplexicaul, but not truly perfoliate; *flowers* minute; *pod* small, inversely heart-shaped; *style* very short.—Waste places on a limestone soil in Oxfordshire, Gloucestershire, Wiltshire, and Middlesex; but very rare.—Fl. April, May. Annual.

3. *T. alpéstré* (Alpine Penny Cress).—Another small species, but little branched; *stem-leaves* arrow-shaped at the base; *flowers* and *pods* rather larger than in *T. perfoliátum; style* longer than the notch of the pod.—Mountainous limestone pastures in the North of England; rare.—Fl. June—August. Perennial.

22. Ibéris (Candytuft).—Small branched glabrous herbs; *flowers* corymbose, white or red, rendered conspicuous by their corymbose arrangement and by the two outer *petals* in each flower being much enlarged; *pod* ovate, notched; *valves* boat-shaped, winged; *seeds* 2. (Name from Iberia (Spain), where many species grow.)

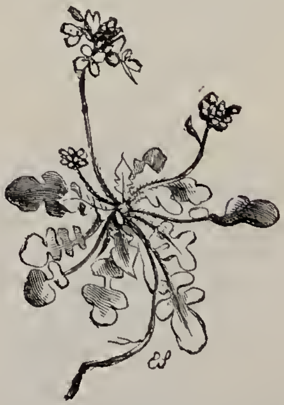
1. *I. amára* (Bitter Candytuft).—Stem 6—10 in. high; *leaves* sessile, oblong-lanceolate; *racemes* lengthening after flowering; *flowers* white or red; *pods* small; *wings* pointed above; *style* longer than the wings.—Chalky fields in the South and East of England.—Fl. July. Annual. Commonly grown in gardens.

23. Teesdália.—Small, annual, glabrous herbs;

leaves all radical, pinnatifid ; *flowers* minute, white, on a corymbose scape ; *petals* generally unequal ; *pod* roundish, notched, keeled ; *seeds* 4. (Named after Robert Teesdale, a Yorkshire botanist.)

1. *T. nudicaúlis* (Naked-stalked Teesdalia).—The only British species, a minute and not inelegant plant with *leaves* closely pressed to the ground and several slender leafless *scapes*, 2—4 in. high ; two outer *petals* twice as long as the others.—Dry banks ; not common.—Fl. April—June. Annual.

24. **Hutchínsia.**—A small annual much-branched herb, with pinnatifid *leaves* ; *flowers* minute, white, in racemes, which lengthen after flowering ; *petals* equal ; *pod* minute, compressed, keeled ; *seeds* 4. (Named after Miss Hutchins, an Irish botanist.)



TEESDÁLIA NUDICAÚLIS (*Naked-stalked Teesdalia*).

1. *H. petrǽa* (Rock Hutchinsia).—The only British species, a pretty little plant, from 2—5 in. high. *Leaves* elegantly pinnatifid ; *pods* elliptic.—Limestone rocks, chiefly in the West of England ; rare.—Fl. March—May. Annual.

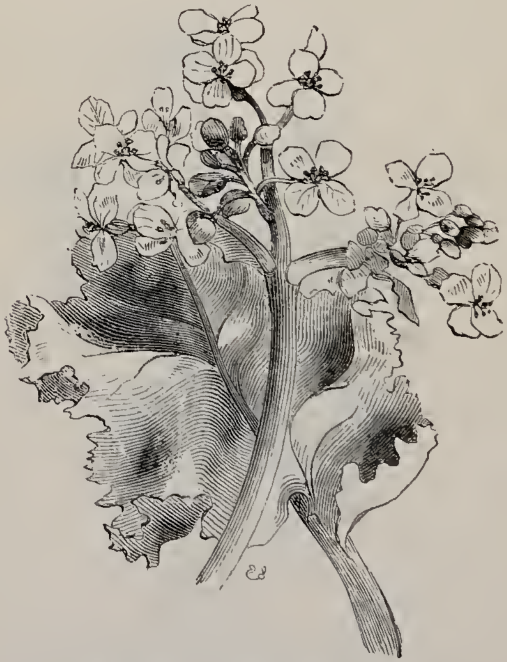
*25. Ísatis (Woad).—Tall, erect, branched herbs; *cauline leaves* sagittate; *flowers* yellow; *pods* pendulous, indehiscent, 1-chambered, rounded, compressed, broadly keeled, 1-seeded. (Name, the Greek name of the genus.)

1.* *I. tinctória* (Woad).—Glabrous, glaucous, 1—4 feet high; *radical leaves*, stalked, oblong; *flowers* small, corymbose; *pods* on lengthening racemes.—Waste places, not indigenous; rare.—Fl. July—August. Biennial.—The ancient Britons stained themselves with this plant, and it is still grown as a dye.

HUTCHÍNSIA PETRÆA (*Rock Hutchinsia*).

26. Crámbé (Sea-kale).—Perennial herbs with *stems* stout, branched; *leaves* broad; *flowers* white, in compound racemes; *pods* indehiscent, 2-jointed, the lower joint seedless, the upper globose, 1-seeded. (Name from the Greek, *krambe*, cabbage.)

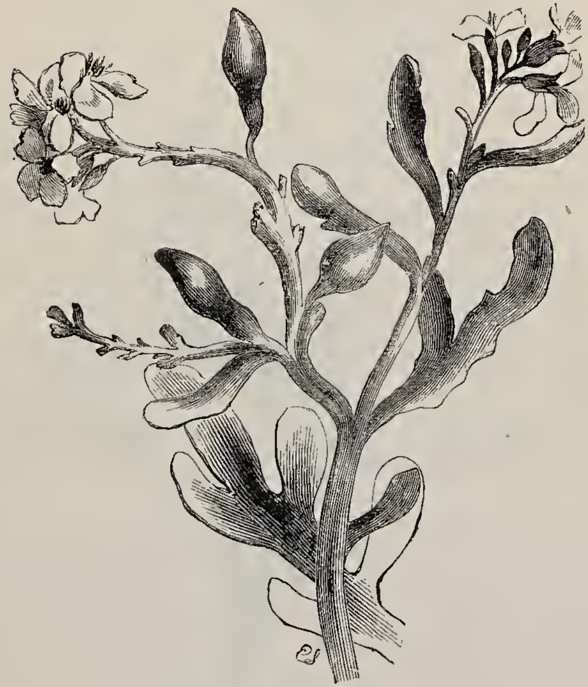
1. *C. marítima* (Sea-kale).—Glabrous, glaucous; *leaves* wavy, toothed, fleshy. This is the plant which is so well known in gardens as a vegetable. The part eaten is the leaf-stalk blanched by being kept from the action of light. It is found on many parts of the sea-coast, and differs in no respect from garden specimens as they appear when the forcing is over.—Fl. June—August. Perennial.



CRÁMBÉ MARÍTIMA (*Sea-kale*).

27. Cakílé (Sea Rocket).—A large, fleshy, branched herb; *flowers* white or lilac; corymbose; *pods* indehiscent, 2-jointed, 4-angled, each joint 1-seeded. (Name of Arabic origin.)

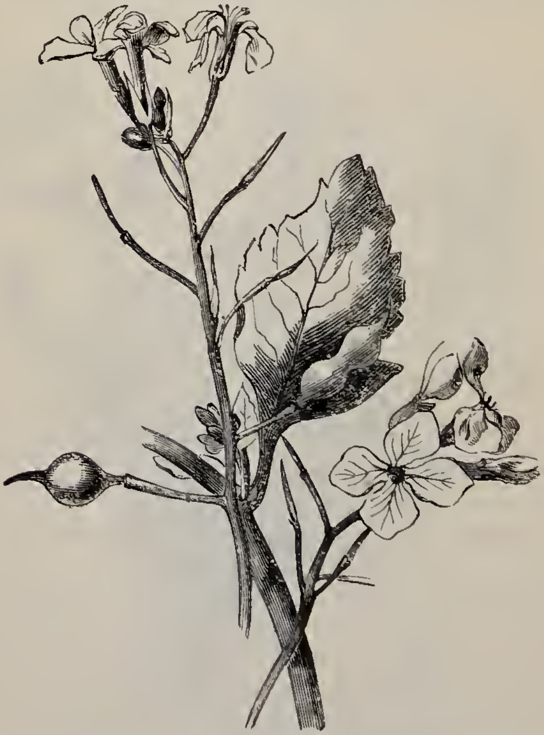
1. *C. marítima* (Purple Sea Rocket).—The only British species, common on sandy sea-shores, growing in a bushy manner, with zig-zag branched *stems*, bearing fleshy, variously-cut, glaucous *leaves*, and *corymbs* of lilac *flowers*. The *seed-vessels* are of very curious construction, each containing two seeds, of which the lower is erect, the upper pendent.—Fl. June—September. Annual.



CAKÍLÉ MARÍTIMA (*Purple Sea Rocket*).

28. Ráphanus (Radish).—*Radical leaves* lyrate; *flowers* in long racemes; *petals* purple-veined; *pod* an elongated, inflated, smooth lomentum with a slender beak. (Name of Greek origin, signifying early appearance or rapid growth.)

1. *R. Raphanístrum* (Wild Radish, White Charlock).—A bristly or almost prickly plant, 1—2 feet high, with horizontal, lyrate *leaves*, and rather large straw-coloured or white *flowers* veined with purple; well distinguished when in seed by its long-beaked *pods*, which have from 3—7 one-seeded joints. Corn-



RÁPHANUS RAPHANÍSTRUM (*Wild Radish*).

fields.—Fl. May—September. Annual. This is the original of the garden radish.

2. *R. marítimus* (Sea Radish).—*Leaves* composed of small and large segments arranged alternately (interruptedly pinnatifid); *flowers* smaller, yellow, rarely white; *pod* with 2—4 joints, deeply constricted.—Sea-cliffs in the south and west; rare.—Fl. July, August. Biennial.

Ord. VII.—Resedáceæ.—Mignonette Family.

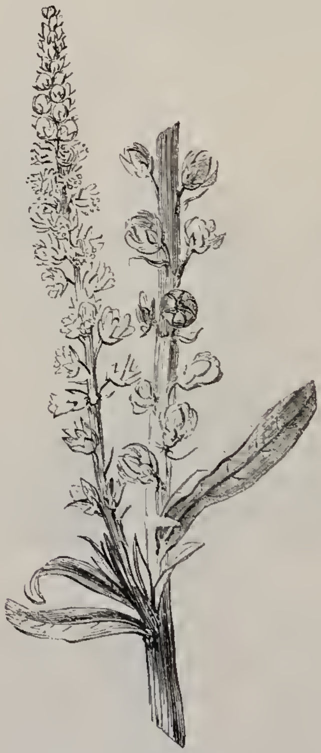
Herbaceous or somewhat shrubby plants, with scattered stipulate *leaves*, and their *flowers* in bracteate racemes. *Sepals* 4—7, persistent; *petals* 4—7; *disk* large, hypogynous; *stamens* 10—24, inserted on the disk; *ovary* of 3 united carpels, 1-chambered, opening at the summit; *stigma* 3-lobed, sessile; *seeds* many, on 3 parietal placentas; *fruit* a capsule. Most members of the Order inhabit Europe and the adjacent parts of Asia and Africa. *Reséda odoráta* (Mignonette), a native of Egypt, is a favourite garden plant on account of the delicious perfume of its flowers.

1. Reséda (Mignonette).—*Flowers* monosymmetric; *petals* unequal, with a broad claw and ligule, the posterior ones with a multifid limb. (Name from the Latin *resedo*, I calm, from supposed sedative properties.)

1. *R. lútea* (Wild Mignonette).—A bushy plant, 1—2 feet high; *leaves* 3-cleft, lower ones pinnatifid; *flowers* in short, broad, conical racemes, yellowish; *sepals* 6, linear; *petals* 6, very unequal.—On chalky soil.—Fl. June—August. Biennial.

2. *R. Lutéola* (Weld, Dyer's Rocket, Yellow-weed). —A taller plant than the last, 2—3 feet high, with long, linear, blunt, undivided, shining *leaves*; long

terminal racemes of yellowish *flowers ; sepals* 4.—Waste places, especially on a chalk or limestone soil. It was formerly used to dye wool yellow, or, with indigo, green. — Fl. June—August. Annual or biennial.



RESÉDA LUTÉOLA (*Dyer's Rocket*).

3.* *R. alba* (Shrubby Rocket), with glaucous pinnate *leaves*, white *flowers*, and usually 5 *sepals*, not uncommon in gardens, occurs as an escape.—Fl. June—August. Biennial.

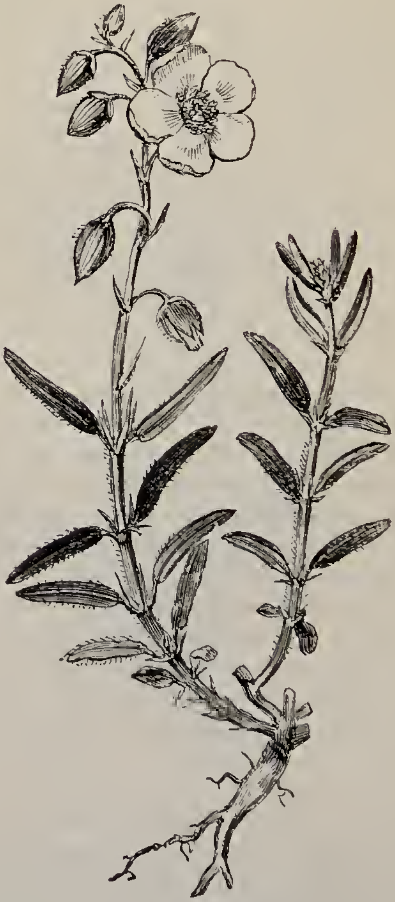
ORD. VIII. CISTÍNEÆ.—THE ROCK-ROSE FAMILY.

Mostly shrubby, but sometimes herbaceous plants, often with viscid branches; *leaves* opposite, entire; *flowers* conspicuous, polysymmetric, white, yellow, or red, lasting a very short time; *sepals* 3 or 5, unequal, the three inner twisted in the bud; *petals* 5, twisted, when in bud, in a direction contrary to the sepals; *stamens* indefinite; *carpels* 3, united; *ovary* 1-chambered; *style* single; *stigmas* 3; *capsule* 3-valved. The plants of this Order are almost confined to the South of Europe and North of Africa. The only species which possesses any remarkable properties is *Cístus Créticus*, which affords the balsam called *Gum Ladanum*.

1. HELIÁNTHEMUM (Rock-Rose).—*Sepals* 5, the two outer either smaller or wanting; *petals* 5; *stamens* numerous; *ovules* many; *capsule* 3-valved. (Name from the Greek *hélios*, the sun, and *anthos*, a flower, because the flowers expand in the sunshine.)

1. *H. Chamæcístus* (Common Rock-Rose).—A beautiful little prostrate undershrub; *leaves* with fringed stipules, oblong, green above, hoary beneath; *flowers* in bracteate racemes, 1 inch across, yellow; the two outer *sepals* very small, the inner apiculate; the *stamens*, if pinched, spread out, and lie down on the petals.—Dry places; common.—Fl. July—September. Perennial.

There are four other British species of *Heliánthemum*, which are all of local occurrence, and rare: *H. guttátum* (Spotted Rock-Rose), a herbaceous annual, with ebracteate yellow *flowers*, with a blood-red spot at the base of each *petal*, found in Cork and the Channel Islands. *H. Bréweri*, differing from *H. guttátum* chiefly in having *bracts*, found in Anglesea. *H. marifólium* (Hoary Rock-Rose), a shrubby plant with *leaves* very hoary beneath and exstipulate, and small bracteate yellow *flowers*, found on limestone rocks in the west. *H. polifólium* (White Rock-Rose), a small shrubby species, with stipulate *leaves*, hoary on both surfaces and bracteate white *flowers*, grows on Brean Down, Somerset, and near Torquay,



HELIÁNTHEMUM CHAMÆCÍSTUS (*Common Rock-Rose*).

Ord. IX.—Violáceæ.—The Violet Family.

A beautiful and important Family of herbs or shrubs, inhabiting most regions of the world. Those which grow in temperate regions are mostly herbaceous; but in the tropical regions of South America there are many shrubby species. *Leaves* scattered, stipulate, simple; *flowers* monosymmetric; *sepals* 5; *petals* 5, 1-spurred; *stamens* 5, with the connective produced beyond the anther-lobes; *carpels* 3; *ovary* 1-chambered; *style* swollen above; *stigma* cup-shaped; *ovules* many, parietal; *capsule* 3-valved. Most of the species possess emetic and laxative properties similar to those of Ipecacuanha.

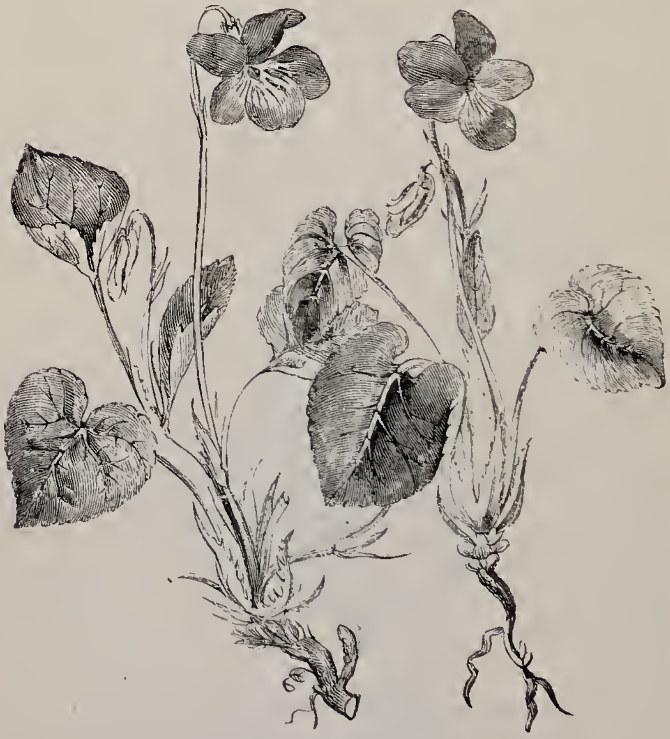
1. Víola (Violet).—*Sepals* 5, auricled at the base; *petals* 5, the lower one spurred; *anthers* united into a tube, the two lower ones furnished with nectariferous tail-like appendages, which are enclosed within the spur of the corolla. (Name, the Latin name of some fragrant flower.) Some species have two kinds of flowers, one opening in spring, conspicuous, but yielding little or no seed; the other not opening (cleistogene) and often apetalous, produced, on short peduncles, in autumn, and yielding abundant seed.

* *Stipules small. With cleistogene flowers.*

1. *V. palústris* (Marsh Violet).—*Rhizome* creeping; *leaves* heart- or kidney-shaped, quite smooth; often purplish beneath; *sepals* obtuse; *petals* delicate lilac, with darker veins; *spur* very short, obtuse.—Bogs; common.—Fl. April—July. Perennial.

2. *V. odoráta* (Sweet Violet).—*Runners* long; *leaves* heart-shaped, slightly downy, especially beneath; *petioles* with deflexed hairs; *flowers* fragrant, deep

purple, lilac, pale rose-colour, or white ; *bracts* above the middle of the flower-stalks ; *sepals* obtuse ; *spur* nearly straight, short, obtuse, inflated towards the end. One of the most highly prized of all our wild flowers, unrivalled in fragrance, delicacy, and variety of tinting, and doubly welcome from its appearing early in spring. The flowers are sometimes used as a laxative for children, as a sweetmeat, or as a chemical test, being changed to red by acids and to green by alkalies.—Fl. March, April. Perennial.



VÍOLA ERICETÓRUM, *and* V. ODORATA.

3. *V. hírta* (Hairy Violet).—Pubescent, without runners; *leaves* heart-shaped, rough; *petioles* with spreading hairs; *flowers* scentless, pale violet or white; *bracts* below the middle of the flower-stalks; *sepals* obtuse; *spur* long, compressed, hooked, obtuse. —Common on dry, especially calcareous, soils.—Fl. April—June. Perennial.

4. *V. silvéstris* (Pale Wood Violet).—*Stem* distinct, without rhizome or runners; *leaves* heart-shaped, lanceolate, nearly glabrous, radical, rosulate; *flowering-branches* axillary; *flowers* scentless; *sepals* acute; *auricles* minute; *petals* oblong, narrow, lilac, lower with few parallel, nearly simple, veins at its base; *spur* blunt, compressed, not furrowed, usually darker than the petal.—Common in copses and hedgerows. —Fl. April, May. Perennial.

5. *V. Riviniána* (Dark Wood Violet).—*Stem* distinct, without rhizome or runners; *leaves* broadly heart-shaped, nearly glabrous, radical, rosulate; *flowering-branches* axillary; *flowers* scentless; *sepals* acute; *auricles* prominent, notched; *petals* broadly obovate, blue, lower with many branched dark veins at its base; *spur* blunt, thick, furrowed, usually yellowish-white.—More generally distributed than the last, to which it is closely allied.—Fl. April, May. Perennial.

6. *V. rupéstris* (Hill Violet).—A small compact plant, with large *flowers*, differing from the last mainly in the downiness of the young *leaves*, *flower-stalks*, and *capsules*; is very rare, occurring in upland pastures in Teesdale.—Fl. May, June. Biennial.

7. *V. ericetórum* (Dog Violet). — Primary and lateral *stems* lengthening and flowering, but without runners; *leaves* ovate-cordate, acute; *flowers* bluish-purple, scentless; *sepals* acute; *spur* obtuse, yellow, longer than the auricles of the sepals.—Heaths and sandy places; common. The popular name of this species implies a reproach for its want of perfume.—Fl. April, May. Perennial.

8. *V. láctea*, an allied form, distinguished by its ovate-lanceolate *leaves*, which are not heart-shaped at the base, its serrate, lanceolate *stipules*, and its narrow grey *petals*, occurs in turfy bogs.

9. *V. stagnína.*—*Rhizome* slender, with runners; primary and lateral *stems* flowering and elongating; *leaves* ovate-lanceolate, sub-cordate; *petioles* winged at the top; *stipules* linear-lanceolate, serrate; *petals* pale lilac, or white; *spur* very short, blunt.—Turf-bogs; rare.—Fl. May, June. Perennial.

** *Stipules leafy, pinnatifid. No cleistogene flowers.*

10. *V. trícolor* (Pansy, Heartsease).—*Stem* ascending, angular, branched; *leaves* long-stalked, ovate-oblong, crenate; *stipules* large, lyrately pinnatifid; *bracts* minute, high up on the peduncle; *petals* spreading, unequal, pale yellow or purple, longer than the sepals.—Cultivated fields, common. The cultivated varieties are countless.—Fl. May—September. Annual.

11. *V. arvénsis* (Field Pansy). — An allied and almost equally common form, differs chiefly in having erect, yellow, or white *petals*, which are not longer than the sepals. Annual.

12. *V. Curtísii*, a rarer form, has a branched *rhizome* with runners, the *petals* rather longer than the sepals, the upper purple, the lateral ones blue, and the lower yellow. It occurs on sandy shores in the West of England and Ireland. Perennial.

13. *V. lútea* (Yellow Mountain Violet, or Mountain Pansy).—*Rhizome* branched with runners; *stem* angular, ascending; *leaves* oblong, crenate; *stipules* palmately pinnatifid, not lyrate, terminal lobe narrow; *petals* spreading, longer than the sepals, yellow, purple, or parti-coloured.—Mountain pastures in the north.—Fl. June, July. Perennial.

ORD. X. POLYGALÁCEÆ.—THE MILKWORT FAMILY.

Herbs and shrubs with bitter, emetic, and laxative properties. *Leaves* scattered, exstipulate, simple; *flowers* in racemes, monosymmetric and often showy; *sepals* 5, unequal, the two inner larger and petaloid; *petals* 3—5, more or less united; *stamens* 8, diadelphous in two sets of four, epipetalous; *anthers* 1-chambered, opening by pores at the summit; *carpels* 2, united into a 2-chambered ovary; *ovules* one in each chamber; *placentation* axile; *fruit* a capsule. Several species are said to be valuable medicinally. *Polýgala Sénega* (Snake-root), a North American plant, is reputed to cure snake-bites. *Kraméria* (Rhatany), obtained from South America, is an astringent, undoubtedly useful in cases of dysentery, and furnishes also a red infusion, used to adulterate port-wine.

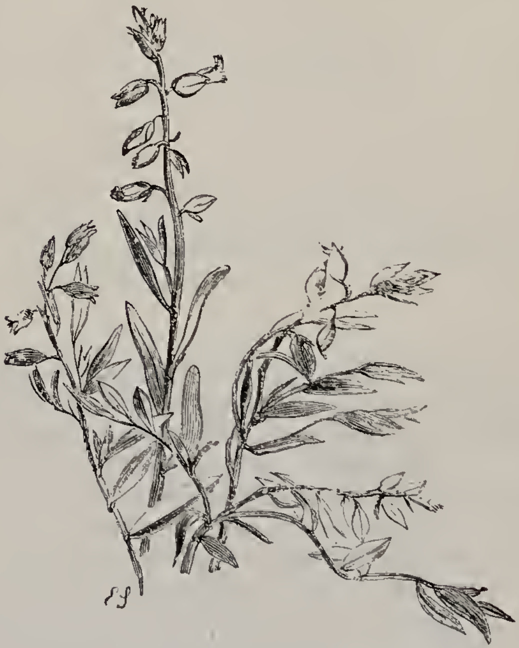
1. POLÝGALA (Milkwort).—The British species are all small herbs. *Sepals* 5, the two inner coloured, wing-shaped, persistent; *petals* 3—5, united, the lower one keel-shaped and crested; *capsule* compressed, 2-valved; *seeds* downy, with an aril at the base. (Name from the Greek, signifying *much milk*, being supposed to increase the yield in cows.)

1. *P. vulgáris* (Common Milkwort, Gangweed).—*Stems* prostrate, ascending, leafy; *leaves* scattered, linear-lanceolate; *racemes* terminal; *bracts* 3, at the base of each flower, the central one as long as the pedicel, the lateral ones shorter; *flowers* blue, pink, or white, 10—20 in a raceme; veins of wing-sepals branching and reuniting freely, the central vein ending in a mucro or projecting point; no cilia on bracts, sepals, or capsule.—Common on heaths and dry pastures, especially on chalky soil.—Fl. June—August. Perennial.

2. *P. oxýptera* is a local form with more prostrate

and spreading growth, narrower *leaves*, smaller, more distant, and more deflexed *flowers*, and narrower *wing-sepals.*

3. *P. serpyllácea*, a more widely-distributed form, has a slender, wiry, flexuose, prostrate *stem; lower leaves* opposite; *flowers* few and small; *wing-sepals* broad, with the principal veins with few branches between them.—Common on heaths.



POLYGALA VULGÁRIS (*Common Milkwort*).

4. *P. calcárea* (Chalk Milkwort).—*Leaves* tufted, the lower ones large and fleshy, obovate; *flowering-branches* axillary; *flowers* large; *wing-sepals* broad, with prominent central vein united near its middle with the branched lateral ones.—Chalk downs, chiefly in the South-east of England.—Fl. May. Perennial.

5. *P. amára*, found in Kent, has also its *leaves* in a rosette and fleshy; but its *flowers* are small, distant, and blue; its *wing-sepals* narrow, linear-oblong; and it is only two or three inches high.

FRANKÉNIA LÆVIS (*Smooth Sea-Heath*).

6. *P. austríaca*, found in Teesdale, has larger and more compactly grouped pink *flowers*.

ORD. XI. FRANKENIÁCEÆ.—THE SEA-HEATH FAMILY.

Herbaceous or somewhat shrubby plants with branched *stems*, whorled exstipulate *leaves* with a membranous sheathing base, and numerous small axillary polysymmetric *flowers*. *Sepals*, *petals*, and *stamens* 4—6 each, the sepals united and persistent, the petals with claws and ligules; *carpels* 2—5; *ovary* 1-chambered; *ovules* many, parietal; *capsule* 2—5-valved. The species of the only genus in the Order inhabit temperate and sub-tropical regions, mostly near the sea.

1. FRANKÉNIA (Sea-Heath).—*Style* divided above into three oblong lobes bearing the *stigma*. (Name from John Franken, a Swedish botanist.)

1. *F. lævis* (Smooth Sea-Heath).—A small procumbent plant, with wiry *stems*; *leaves* crowded, narrow, rolled back at the edges, smooth, fringed at the base; *flowers* rose-coloured.—Salt marshes on the south-east coast.—Fl. July, August. Perennial.

Another species, *F. pulverulénta* (Powdery Sea-Heath), with obovate *leaves*, pulverulent beneath, formerly grew on the Sussex coast, but is now extinct.

ORD. XII. CARYOPHYLLÁCEÆ.—THE PINK FAMILY.

An extensive and well-marked Order of herbaceous plants, chiefly Arctic, Alpine, European, and W. Asiatic. The *stems*, which are sometimes woody below, are generally swollen at the nodes or joints; the *leaves* always opposite and simple, and often glaucous; the *flowers* polysymmetric, and frequently large and ornamental, mostly red or white, in cymes. *Sepals* 4—5, distinct, or with a calyx-tube below ; *petals* 4—5, distinct ; *stamens* 4—10, usually twice as many as the petals, hypogynous; *carpels* 2—5, united into a 1-chambered or imperfectly 2—5-chambered ovary with free-central placentation ; *styles* 2—5 ; *ovules* numerous ; *capsule* opening by twice as many teeth or valves as there are styles. Though no members of the Order are put to much use, the Pinks, Carnations, and Sweet Williams are favourite garden flowers ; and our hedges are much indebted for their showy appearance in spring to the great White Stitchwort, and in summer to the Red and White Campions. Botanists subdivide this large Order into three sub-orders.

Sub-Order I.—Siléneæ.—Campion Tribe. Leaves exstipulate ; sepals 5, *united into a tube ; petals* 5, *clawed ; stamens* 10, *united at their base and inserted with the petals on the elongated axis below the ovary ; styles distinct.*

* *Two or more imbricate bracteoles below calyx.*

1. Diánthus.—*Styles* 2 ; *capsule* 1-chambered, opening at the top with 4 valves ; *seeds* flattened.

** *Without bracteoles.*

*2. Saponária.—*Styles* 2 ; *capsule* 1-chambered, opening at the top with 4 valves ; *seeds* rounded.

3. Siléné.—*Petals* generally with a ligule ; *styles* 3, rarely 5 ; *capsule* imperfectly 3-chambered, opening at the top with 3—6 valves.

4. Lýchnis.—*Styles* 4—5 ; *capsule* 1- or imperfectly 5-chambered, opening at the top by 4—10 teeth.

Sub-Order II.—Alsíneæ.—Chickweed Tribe. Leaves exstipulate ; sepals distinct ; stamens not united ; ovary not stalked ; styles distinct.

5. Holósteum.—*Sepals* 5 ; *petals* 5, toothed at the margin ; *stamens* 3—5 ; *styles* 3 ; *capsule* cylindric, opening at the top with 6 teeth, many-seeded.

6. Cerástium.—*Sepals* 5; *petals* 5, usually bifid ; *stamens* 4—10 ; *styles* 3, 4, or 5 ; *capsule* cylindric, opening at the top with 5—10 teeth, many-seeded.

7. Stellária.—*Sepals* 5 ; *petals* 5, deeply bifid ; *stamens* usually 10 ; *styles* 3—5 ; *capsule* globose, opening with 6—10 valves or teeth, many-seeded.

8. Arenária.—*Sepals* 5 ; *petals* 5, entire or slightly emarginate ; *stamens* 10, rarely 5 ; *styles* 3, rarely 4 ; *capsule* 3—10-valved.

9. Sagína.—*Sepals* 4—5 ; *petals* 4—5, minute, entire, or absent ; *stamens* 4—10 ; *styles* 4—5 ; *capsule* 4—5-valved, many-seeded.

Sub-Order III.—Polycárpeæ.—Spurrey Tribe. Leaves with membranous stipules ; sepals 5, distinct ; petals 5 ; stamens 3—10 free ; styles 3—5 ; capsule not stalked.

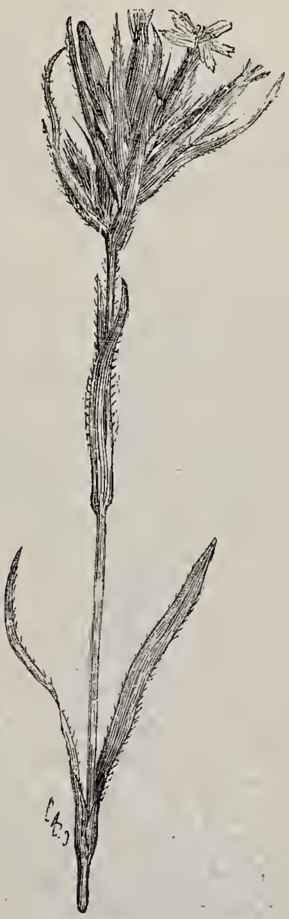
10. Spérgula.—*Petals* entire ; *stamens* 5—10 ; *styles* 5, free ; *capsule* 5-valved, many-seeded.

11. Búda.—*Petals* entire ; *stamens* 5—10 ; *styles* 3, rarely 5, free ; *capsule* 3-valved, rarely 5-valved, many-seeded.

12. Polycárpon.—*Sepals* keeled at the back, hooded at the end ; *petals* emarginate ; *stamens* 3—5 ; *styles* 3, short, united at base ; *capsule* 3-valved, many-seeded.

1. Diánthus (Pink).—Herbaceous plants with narrow, grass-like *leaves*, often tufted : *flowers* solitary or fascicled ; *calyx* tubular, 5-toothed, with bracteoles below it ; *petals* 5, long-clawed, often toothed ; *stamens*

10, united at the base ; *ovary* 1-chambered ; *styles* 2 ; *capsule* opening with 4 valves at the top ; *seeds* flattened. (Name in Greek signifying *flower of Jupiter*, from its beauty.)



DIÁNTHUS ARMÉRIA (*Deptford Pink*).

* *Flowers fascicled.*

1. *D. Arméria* (Deptford Pink).—*Stems* few, erect

1—2 feet high, downy; *leaves* linear, downy, lower obtuse, upper acute; *bracteoles* lanceolate-subulate, downy, as long as the calyx; *calyx* 1—2 in. long; *petals* rose-colour dotted with white, toothed.—Hedgerows on dry soil; rare.—Fl. July, August. Annual.

2. *D. prólifer* (Proliferous Pink).—*Stems* few, erect, about a foot high, smooth; *leaves* roughish at the edge; *bracteoles* brown, membranous, pellucid; *flowers* opening one at a time, rose-colour.—Gravelly pastures; rare.—Fl. June—October. Annual.

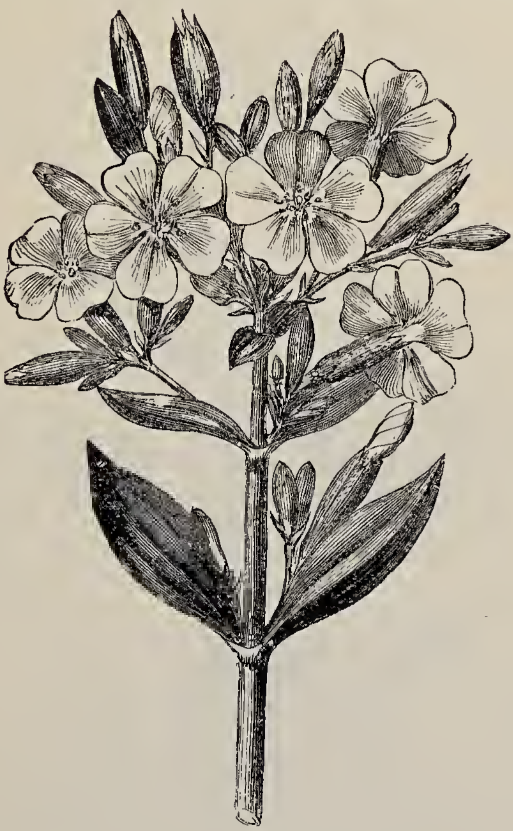
** *Flowers not fascicled.*

3. *D. deltoídes* (Maiden Pink).—A much-branched plant, with *stems* 6—12 in. high, roughish; *leaves* downy, rough; *bracteoles* 2, half as long as the calyx; *flowers* $\frac{3}{4}$ in. across, rose-coloured, with white spots and a dark ring in the centre, scentless; *petals* toothed.—Gravelly banks; not common.—Fl. June—September. Perennial.

4. *D. cæsius* (Cheddar Pink).—*Stems* many, 4—10 in. high; *leaves* glaucous, with rough edges; *bracteoles* 4, roundish, shortly pointed, one-fourth as long as the calyx; *flower* solitary, 1 in. across, rose-coloured, scented; *petals* much cut.—Limestone rocks, Cheddar, Somerset.—Fl. June, July. Perennial.

5.* *D. plumárius* (Common Pink).—*Stem* about a foot high, 2—5-flowered; *leaves* rough at the edge; *bracteoles* roundish-ovate, mucronate, one-fourth as long as the calyx; *flower* 1 in. across, pale pink, or white, fragrant; *calyx-teeth* ciliate, shorter than the capsule; *petals* downy, cut as far as the middle of the blade.—Naturalised on old walls.—The origin of the garden Pinks.—Fl. June—August. Perennial.

6.* *D. Caryophýllus* (Clove Pink, Carnation, or Clove Gillyflower).—Glabrous and glaucous, branched, 1—2 feet high; *leaves* with smooth edges; *flowers* 1½ in. across, rose-pink, fragrant; *calyx-teeth* not ciliate, longer than the capsule; *petals* glabrous, notched.—



SAPONÁRIA OFFICINÁLIS (*Common Soapwort*).

Naturalised on old walls.—The origin of the garden Carnations.—Fl. July, August. Perennial.

*2. SAPONÁRIA (Soapwort) — Herbs with conspicuous flowers in panicled or fascicled cymes; *calyx* tubular, ebracteate ; *capsule* 2-chambered at the base, 4-valved at the top ; *seeds* rounded. (Name from the Latin *sapo*, soap, the plant abounding in a soapy juice.)

1.* *S. officinális* (Common Soapwort).—A robust, succulent plant, 2—4 feet high, with broad, pointed, smooth *leaves*, and handsome flesh coloured *flowers*, which are often double.—Hedges near villages ; not indigenous.—Fl. August, September. Perennial.

3. Silénè (Catchfly).—Herbaceous, often viscid, plants ; *calyx* ebracteate, inflated, 5-toothed, 10-veined : *petals* 5, with long narrow claws, and usually a double ligule at the base of the blade : *styles* usually 3 ; *capsule* usually 3-chambered in its lower half and 6-valved above. (Name said to be from the Greek *síalon*, saliva, alluding, as does the English name, to the viscidity of some species. This property protects the honey in the flowers from "unbidden guests," insects that crawl up the stem and would not cross-pollinate the flowers ; but these plants are apparently not insectivorous, the captured insects not being digested or absorbed.)

1. *S. Cucúbalus* (Bladder Campion, White Bottle).—Generally glabrous and glaucous ; but a downy variety (var. *pubérula*) is occasionally found. *Stem* erect, from 1 to 2 feet high ; *leaves* oblong, acute ; *flowers* many, drooping, panicled, scented at night ; *calyx* inflated, bladder-like, with a network of veins, often tinged with purple ; *petals* white, deeply cloven, seldom with any ligule. A common weed.—Fl. June—August. Perennial.

2. *S. marítima* (Sea Campion).—*Stems* numerous from the same root, prostrate, spreading ; *leaves* oblong, acute ; *flowers* few or solitary, larger than those of the last ; *petals* slightly cleft into two broad segments, each with a ligule at the base of the blade.

Common on the sea-shore, less so by mountain streams. —Fl. all the summer. Perennial.

3.* *S. Arméria*, with a viscid *stem*, smooth *leaves*, a many-flowered corymbose *cyme*, and notched white *petals* with ligules, occurs as a casual, but is not indigenous.—Fl. July. Annual.

4. *S. cónica* (Striated Corn Catchfly).—*Stem* erect, forked, hairy, 6—12 in. high ; *leaves* narrow, downy ; *flowers* small, numerous, erect ; *calyx* conical, with 30 furrows ; *petals* rosy, cleft, with ligules.—Sandy fields ; very rare.—Fl. May—July. Annual.

SILÉNÉ MARÍTIMA (*Sea Campion*).

5. *S. ánglica* (English Catchfly). — Hairy and viscid, 6—12 in. or more high ; *stem* erect or branched ; *leaves* narrow ; *flowers* small, in leafy racemose cymes ; *calyx* with green pubescent ribs and bristle-like teeth ; *petals* white or pink, bifid, with

ligules; *capsules* drooping.—Gravelly fields; not uncommon.—Fl. all the summer. Annual.

6. *S. quinquevúlnera*, found chiefly in the Channel Islands, differs in its *petals*, which are white, with a red spot on each (whence the specific name meaning "Five Wounds"), and are not cleft.

7. *S. acaúlis* (Moss Campion).—Densely tufted, bright-green, moss-like; *stem* much branched; *leaves* narrow, fringed at the base; *flowers* pink or white, short-stalked, solitary, erect, ½ in. across; *calyx* tubular, smooth, with 10 veins; *petals* slightly notched with notched ligules.—Confined to the summits of our loftiest mountains, where it forms a matted turf gay with blossoms.—Fl. June—August. Perennial.

8. *S. Otítes* (Spanish Catchfly).—*Stem* erect, about a foot high, viscid, with whorled branches; *leaves* few, narrow; *flowers* small, erect, yellowish; *petals* narrow, not notched, without ligules; *stamens* and *carpels* generally on separate plants.—Sandy fields in the East of England.—Fl. June—August. Perennial.

9. *S. nútans* (Nottingham Catchfly).—Pubescent and viscid, about 1½ feet high; *branches* opposite, 3-forked; *flowers* large, white or pink, all drooping one way, most expanded and fragrant in the evening; *calyx* tubular, swollen in the middle; *petals* deeply cleft, with ligules.—On limestone rocks and castle-walls; not common.—Fl. May—July. Perennial.

10.* *S. itálica* (Italian Catchfly), a tall, viscid, pubescent species, with trichotomous erect *panicles*, bifid *petals* without ligules, and a long stalk to the *capsule*, occurs as a casual in Kent.

11. *S. noctiflóra* (Night-flowering Catchfly).—Softly pubescent and viscid, about a foot high; *stem* erect, repeatedly forked; *flowers* erect, reddish-white, rather large; *calyx* with 10 green hairy ribs; *petals* deeply notched, unrolling about sunset, and closing early in the morning, very fragrant during the night.

—Sandy and gravelly fields; not common.—Fl. July, August. Annual.

4. Lýchnis (Campion).—Herbaceous plants differing in no invariable characters from *Siléné;* but generally with 5 *styles* and 5 or 10 teeth to the *capsule.* (Name from the Greek *luchnos,* a lamp, probably from the orange flowers of some species.)

1. *L. álba* (Evening Campion).—Hairy, 1—3 feet high; *leaves* ovate-lanceolate; *flowers* in loose dichasial cymes, 1 in. across, white, or rarely reddish, fragrant in the evening, diœcious; *calyx* greenish, inflated, teeth long; *petals* deeply bifid, with ligules; *capsule* conical, 10-toothed, the teeth erect.—Fields and hedgerows; common.—Fl. all the summer. Biennial or perennial.

2. *L. dioíca* (Red Campion).—A closely-allied species, differing chiefly in its reddish *calyx* with shorter teeth, *petals* red, rarely white, and sub-globose *capsule* with recurved teeth.—Copses and hedgebanks; common.—Fl. May—July. Perennial.

3. *L. Flos-cúculi* (Ragged Robin).—A pretty and well-known marsh plant, with a reddish-green angular *stem,* 1—2 feet high, the lower part of which is roughish, with short stiff deflexed hairs, the upper part slightly viscid; *leaves* very narrow; *flowers* loosely dichasial, rose-coloured, or very rarely white; *calyx* tubular, 10-ribbed, with red veins; *petals* deeply cut into linear diverging segments; *capsule* 5-toothed. —Fl. in May and June, when the cuckoo is in full song, whence its specific name. Perennial.

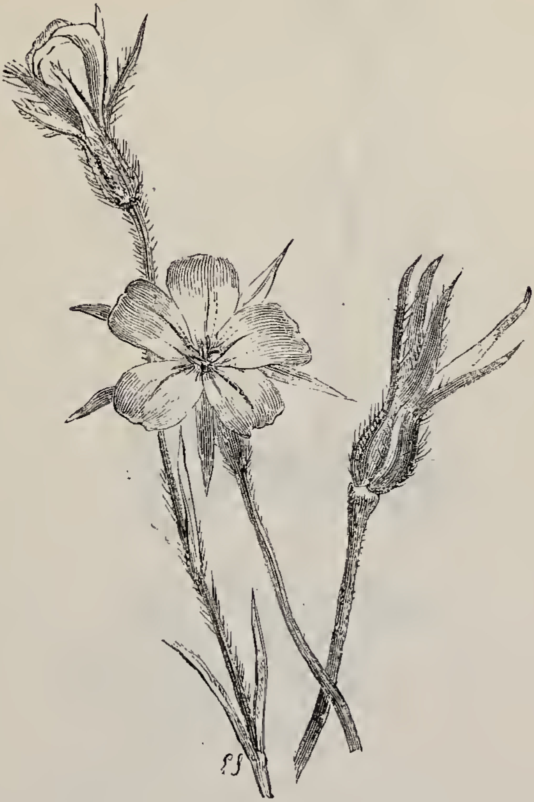
4. *L. Viscária* (Red German Catchfly).—*Stem* simple, about a foot high, viscid at the nodes; *leaves* lanceolate, sub-glabrous; *flowers* few, large, rose-red; *petals* slightly notched; *capsule* distinctly stalked, 5-toothed, 5-chambered when young.—Dry rocks in North Wales and Scotland; very rare.—Fl. June—August. Perennial.

5. *L. alpína* (Red Alpine Campion).—A small, tufted, glabrous species with red flowers, confined to the summits of northern mountains.

6. *L. Githágo* (Corn-Cockle).—Downy with dense white hairs; *stem* erect, 2—3 feet high; *leaves* narrow; *flowers* solitary, 1½—2 in. across; *calyx* woolly, ribbed, with leafy teeth much longer than the corolla; *petals* bluish-pink, obovate, undivided, with-

LYCHNIS FLOS-CÚCULI (*Ragged Robin*).

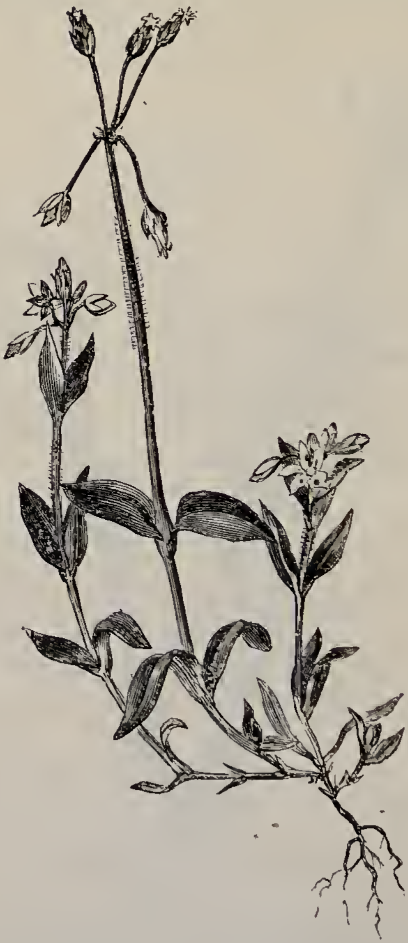
out ligules; capsule 5-toothed.—A handsome cornfield weed, the large seeds of which are rather difficult to separate from corn; less common than formerly.—Fl. June—August. Annual.



LÝCHNIS GITHÁGO (*Corn-Cockle*).

5. Holósteum (Jagged Chickweed). — Annual, viscid herbs with *flowers* in umbellate cymes; *sepals* 5, *petals* 5, toothed; *stamens* 3—5, rarely 10; *styles*

3 rarely 4 or 5; *capsule* cylindric, 6-, or rarely 8- or 10-toothed, many-seeded. (Name in Greek signifying *all bone*, of uncertain application.)



HOLÓSTEUM UMBELLÁTUM (*Umbelliferous Jagged Chickweed*).

1. *H. umbellátum* (Umbelliferous Jagged Chick-

weed).—The only British species, 4—5 in. high; *stems* smooth below, hairy and viscid above; *leaves* ovate; *flowers* in terminal umbellate cymes about 5 together, their pedicels bending downward after flowering and rising again in fruit; *sepals* white with membranous edges; *petals* white or pale pink, a little longer.—Old walls in Norfolk and Suffolk; very rare. —Fl. April. Annual.

6. CERÁSTIUM (Mouse-ear Chickweed).—Pubescent, or rarely glabrous, herbs, with white *flowers* in terminal dichasial cymes; *sepals* 5, rarely 4; *petals* as many, rarely absent, generally bifid; *stamens* 10, sometimes 5 or 4; *styles* usually 3 or 5; *ovules* many; *capsules* cylindric, often incurved, usually 6- or 10-toothed. (Name from the Greek *keras*, a horn, from the shape of the capsule in some species.)

* *Sepals longer than the petals: petals not notched.*

1. *C. quaternéllum* (Upright Mœnchia).—Glabrous, glaucous, erect, 2—6 in. high; *leaves* linear, acute, rigid; *flowers* few, relatively large, opening only in sunshine; *sepals* 4, acute, with broad white membranous margins; *petals, stamens,* and *styles* 4 each; *capsule* 8-toothed.—Dry places.—Fl. May, June. Annual.

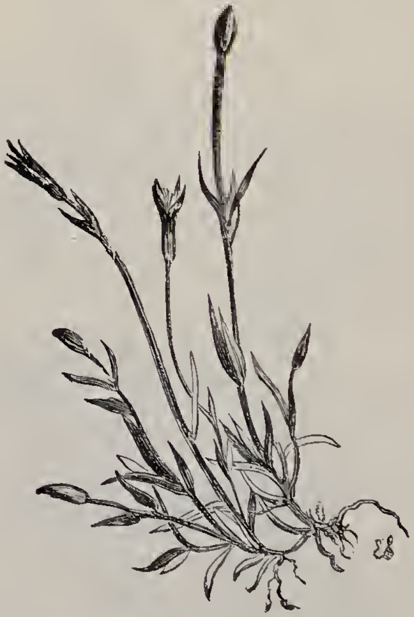
** *Sepals as long as the petals: petals bifid.*

† *Capsules nearly straight. Annual.*

2. *C. tetrándrum* (Four-stamened Mouse-ear Chickweed).—Hairy and viscid, 4—12 in. high; *stem* forking from the base; *leaves* oval or oblong; *bracts* broad, oval, leafy; *flowers* $\frac{1}{4}$ in. across; *sepals* acuminate with narrow membranous margins; *pedicel* 2 or

3 times as long as the capsule.—Dry places near the sea.—Fl. April—October. Annual.

3. *C. púmilum* (Dwarf Mouse-ear Chickweed).—Viscid; *stem* branched at the root; *leaves* spathulate; *flowers* in terminal forked cymes; *upper bracts* and *sepals* with narrow membranous margins; *pedicel* short, curved in fruit; *capsule* slightly curved.—Dry banks in the south; rare.—Fl. April, May. Annual.



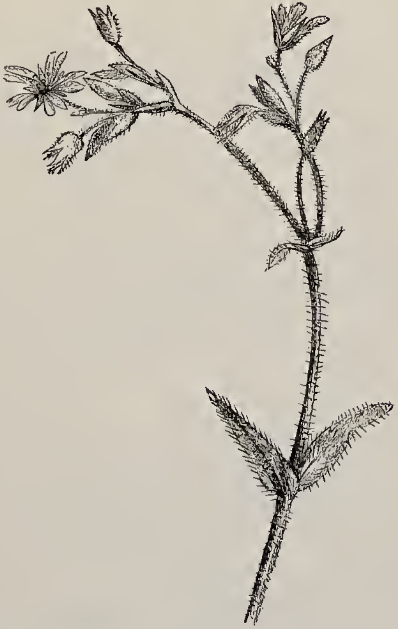
CERÁSTIUM QUATERNÉLLUM (*Upright Mœnchia*).

4. *C. semidecándrum* (Five-stamened Mouse-ear Chickweed).—Downy, sometimes viscid; *stem* erect or decumbent, 1—10 in. high, branched from the base; *leaves* broadly ovate; *bracts* with their upper half membranous; *sepals* with broad membranous margins; *stamens* 4, 5, or 10; *pedicel* at first reflexed,

afterwards erect.—Dry places; common.—Fl. April, May. Annual.

†† *Capsules curved.*

5. *C. glomerátum* (Clustered Mouse-ear Chickweed).—*Stem* erect, hairy; *leaves* ovate; *flowers* in tufted cymes, short-stalked; *bracts* leafy, hairy; *sepals* with narrow membranous margins, hairy.—Dry places; common.—Fl. April—September. Annual.



CERÁSTIUM TRIVIÁLÉ (*Wayside Mouse-ear Chickweed*).

6. *C. triviálé* (Wayside Mouse-ear Chickweed).—*Stems* mostly procumbent, downy, or with lines of pubescence; *leaves* oblong-lanceolate; *flowers* few, in

loose cymes, on lengthening stalks; *secondary bracts* sometimes with membranous margins; *sepals* obtuse, with broad membranous margins; *stamens* 5 or 10. A common weed, with inconspicuous white flowers and straggling stems, generally covered with dust. The seed-vessels, when ripening, lengthen and curve. —Fl. all the summer. Biennial or perennial.

*** *Sepals half as long as the petals. Perennial.*

7. *C. alpínum* (Alpine Mouse-ear Chickweed).—Pubescent with white silky hairs; *stem* prostrate or ascending; *leaves* broadly ovate; *flowers* few, sometimes an inch across; *bracts* and *sepals* obtuse, with narrow membranous margins. Alpine rocks in the north.—Fl. June—August. Perennial.

8. *C. árcticum* (Arctic Mouse-ear Chickweed).—Pubescent with short yellowish hairs; *stem* prostrate, tufted; *flowers* usually solitary; *sepals* with broad membranous margins. Otherwise resembling *C. alpínum*.—Mountains of Wales and Scotland; rare.—Fl. May—August. Perennial.

9. *C. arvénsé* (Field Mouse-ear Chickweed).—Hairy, prostrate, ascending; *branches* 6—10 in. high; *leaves* linear-lanceolate; *flowers* numerous, in forked cymes; *bracts* and *sepals* acute, with membranous margins.—Dry fields; not common.—Fl. April—August. Perennial.

10. *C. trigýnum* (Alpine Stitchwort).—*Stem* 4—8 in. long, slender, decumbent, much branched below, with a line of pubescence shifting from side to side at each node; *leaves* small, narrow, oblong, glabrous; *flowers* ½ in. across, on very slender stalks, 1—3 in a cyme.—By Scotch Highland streams; rare. —Fl. July, August. Perennial.

7. STELLÁRIA (Stitchwort). — Slender, usually

glabrous herbs, with *leaves* grass-like or short and broad; *flowers* white, in dichasial cymes; *sepals* and *petals* 5 each, rarely 4, the latter bifid; *stamens* 10, rarely 8; *styles* 3, rarely 5; *ovules* many; *capsule* 6-, rarely 5-valved. (Name from the Latin *stella*, a star, from its star-like blossoms.)

* *Sepals not united: styles 5: capsule with 5 bifid valves.*

1. *S. aquática* (Great Chickweed). — A much-branched, straggling plant; *stem* angular, brittle, 1—3 feet long, covered with glandular hairs; *leaves* ovate-cordate, acute, ciliate, the lower ones stalked; *flowers* solitary in the angles of the stems.—Wet places, but not general.—Fl. July, August. Perennial.

** *Sepals not united: styles 3: capsule with 6 entire valves.*

2. *S. némorum* (Wood Stitchwort).—Resembling the last in habit, but sometimes glabrous; *leaves* rough on the upper surface; *flowers* $\frac{1}{2}$—$\frac{3}{4}$ in. across, on very slender stalks in a loose much-branched cyme; *sepals* with narrow membranous margins.—Damp woods, chiefly in the north.—Fl. May—August. Perennial.

3. *S. média* (Chickweed).—Prostrate or ascending, varying considerably in size; *stem* with a line of hairs alternating from side to side; *leaves* glabrous, succulent, ovate, shortly pointed, the lower ones with ciliate stalks; *flowers* small, axillary; *sepals* hairy, with a narrow membranous margin, as long as the petals; *petals* deeply 2-cleft, or absent; *stamens* 3, 5, or 10.—Waste places and as a weed in gardens; abundant.—Fl. all the year round. Annual.

4. *S. umbrósa* (Perennial Chickweed).—A more erect, slender, glabrous form, with ovate-acuminate *leaves* and glabrous *sepals*.—Shady places; not common. Perennial.

5. *S. Holóstea* (Greater Stitchwort, Satin-flower, or Adder's-meat).—*Stem* 1—2 feet high, nearly erect, 4-angled, rough-edged, brittle at the nodes; *leaves* sessile, narrow, tapering to a long point, ciliate; *flowers* few, $\frac{3}{4}$ in. across, in leafy dichasial cymes, with slender stalks; *petals* deeply 2-cleft.—Among the most ornamental of our spring flowers, scarcely less conspicuous with its delicate green leaves than its

STELLÁRIA HOLÓSTEA (*Greater Stitchwort*).

snow-white petals. The stems do not die down to the ground in the winter, as is the case with most herbaceous perennials, but though dead to all appearance, they send out delicate green tufts very early in the year, so that the flowering stems, especially in bushy places, seem to have made an unusually rapid growth. —Fl. April—June. Perennial.

*** *Sepals united in a conical tube: styles* 3 : *capsule* 6-*valved.*

6. *S. palústris* (Glaucous Marsh Stitchwort).—Glabrous, glaucous; *stem* slender, erect, 4-angled, 6—12 in. high; *leaves* sessile, narrow, tapering, entire; *flowers* few, in a loose cyme, $\frac{1}{2}$—$\frac{3}{4}$ in. across; *bracts* and *sepals* with membranous margins; *petals* very deeply 2-cleft, much longer than the 3-veined sepals. —Marshy places; not common.—Fl. May—August. Perennial.

7. *S. graminea* (Lesser Stitchwort).—Glabrous, not glaucous; *stem* straggling, 1—3 feet high, 4-angled; *leaves* sessile, very narrow, acute, ciliate; *flowers* smaller than in the last two species, in loose cymes; *bracts* membranous; *petals* very deeply cleft, scarcely longer than the 3-veined sepals.—Dry heathy places; common.—Fl. May—August. Perennial.

8. *S. uliginósa* (Bog Stitchwort).—Slender, straggling or erect, 3—18 in. high; *stem* 4-angled, glabrous; *leaves* broadly lanceolate, with a stiff tip, smooth, sometimes ciliate; *flowers* few, $\frac{1}{4}$ in. across, in loose cymes; *petals* deeply 2-cleft, shorter than the 3-veined sepals.—Boggy places; common.—Fl. May, June. Perennial.

8. ARENÁRIA (Sandwort).—Small herbs often tufted, with white flowers in dichasial cymes; *sepals* 5; *petals* 5, entire or slightly notched, rarely absent;

disk annular or glandular; *stamens* 10, rarely 5; *styles* 3—4; *capsule* short, with 3—4 valves, which may be bifid. (Name from the Latin *arena*, sand, many species growing in sand.)

* *Leaves awl-shaped: disk annular: capsule with* 3—4 *entire valves: seeds numerous.*

1. *A. vérna* (Vernal Sandwort).—A small tufted plant; *leaves* subulate, acute, 3-veined; *flowers* nearly solitary, comparatively large, ⅓ in. across, on slender stalks; *petals* longer than the sepals.—Rocky places in mountainous districts; rare.—Fl. May—September. Perennial.

2. *A. sulcáta* (Alpine Sandwort).—Smaller in all its parts, more yellow-green and less compact in growth, with blunt *leaves*, and *petals* shorter than the sepals, is very rare, being confined to the summits of some of the Scotch mountains.—Fl. July, August. Perennial.

3. *A. uliginósa* (Bog Sandwort).—A loosely-tufted form with ascending *stems*, veinless *leaves* and *flowers* 1—3 together, on slender stalks.—Grows by a stream in Teesdale.—Fl. June, July. Perennial.

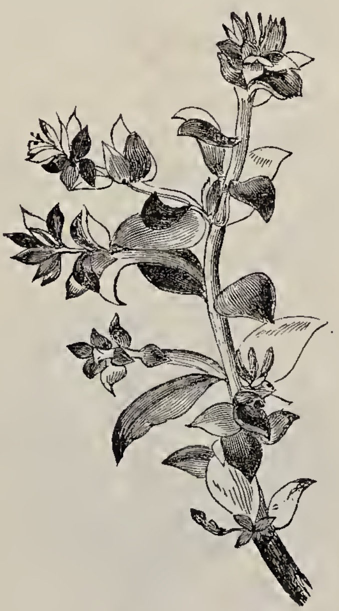
4. *A. tenuifólia* (Fine-leaved Sandwort).—An erect, slender plant, 4—6 in. high; *stem* much forked; *leaves* acute, 3—5-veined; *flowers* small, numerous, in the forks of the stem; *petals* shorter than the sepals.—Dry places, chiefly in the eastern counties; rare.—Fl. May—August. Annual.

** *Leaves broad: disk annular: capsule with* 3 *bifid valves: seeds numerous.*

5. *A. trinérvia* (Three-veined Sandwort).—A weak, straggling, downy plant, about a foot long, approaching the Chickweed (*Stellária média*) in habit, but at

once distinguishable by its undivided *petals; leaves* ovate, acute, 3—5-veined, ciliate, the lower ones stalked; *flowers* solitary, from the forks of the stem and axils, on long slender stalks; *sepals* longer than the petals, 3-veined, the central vein hairy.—Damp shady places; common.—Fl. May, June. Annual.

6. *A. serpyllifólia* (Thyme-leaved Sandwort).—A repeatedly-forked, sub-erect, grey-green, downy plant, 3—6 in. high, with recurved hairs; *leaves* ovate, acute, roughish, sessile, 1—3-veined; *flowers* inconspicuous; *sepals* acute, with 3 hairy veins.—Dry places; common.—Fl. June—August. Annual.



ARENÁRIA PEPLÓÏDES (*Sea Purslane*).

7. *A. ciliáta* (Fringed Sandwort) is a small, matted, prostrate, downy species, with spathulate ciliate *leaves* and large nearly solitary *flowers*, growing on lime-

stone mountains in co. Sligo.—Fl. June, July Perennial.

8. *A. norvégica* (Norwegian Sandwort).—Differs mainly in being more succulent, and nearly glabrous, its *leaves* not being ciliate. It occurs in the Orkney and Shetland Islands.—Fl. July, August. Perennial.

9. *A. góthica* (Gothland Sandwort), more tufted, less succulent, more downy, with *leaves* ciliate at the base with curved hairs, is closely allied.—On limestone in West Yorkshire.—Fl. June—September. Annual (?).

*** *Flowers polygamous: disk of* 5 *or* 10 *interstaminal glands: capsule* 3-*valved: seeds few.*

10. *A. peplóïdes* (Sea Purslane).—A low, succulent, dark-green, glabrous, marine plant; *rhizome creeping; branches* ascending, forked, 4—8 in. high; *leaves* decussate, ovate, acute, sessile, recurved; *flowers* small, in the forks of the stem, often diœcious; *sepals* obtuse, with membranous margins; *capsule* large, globose, fleshy; *seeds* 1—2, large.—Forming

ARENÁRIA SEDÓÏDES (*Mossy Cyphel*).

tangled masses on sandy sea-shores. — Fl. May—September. Perennial.

11. *A. sedoïdes* (Mossy Cyphel).—A densely-tufted, yellow-green prostrate plant forming cushions 6—12 in. across, with a long tap-root; *leaves* crowded, narrow, ciliate; *flowers* solitary, greenish, being generally apetalous and diœcious; *capsule* and *seeds* small.—Summits of Scottish mountains.—Fl. June—August. Perennial.

9. SAGÍNA (Pearl-wort).—Very small tufted plants with awl-shaped *leaves* united at their bases; small stalked tetramerous or pentamerous *flowers*; petals shorter than the sepals, sometimes minute or absent; *ovules* many. (Name in Latin signifying *fattening meat*, totally inapplicable to these minute plants.)

* *Sepals, stamens, styles, and valves of capsules* 4: *petals minute or absent.*

1. *S. marítima* (Sea Pearl-wort).—A creeping, ascending, glabrous plant; *stem* slender and forked, with long internodes, brittle, often reddish; *leaves* fleshy, blunt or apiculate; *pedicels* erect; *sepals* broad, blunt, with incurved tips, sub-erect in fruit.—Sea-shores; common.—Fl. May—September. Annual.

2. *S. apétala* (Annual Pearl-wort).—*Branches* slight, hairy, ascending; *leaves* linear, awned, ciliate at the base; *pedicels* erect; *sepals* blunt, spreading in fruit in the form of a cross.—Dry places.—Fl. May—September. Annual.

3. *S. ciliáta* (Ciliate Pearl-wort).—Nearly glabrous, prostrate; *leaves* linear, awned, ciliate; *sepals* adpressed to the ripe capsule.—Heaths and dry places.—Fl. May, June. Annual.

4. *S. procúmbens* (Procumbent Pearl-wort).—Glabrous, prostrate; *branches* spreading from a central

rosette; *leaves* usually fascicled, linear, awned; *pedicels* curved downwards after flowering, but afterwards erect; *sepals* sometimes 5, spreading in fruit.—Well known to gardeners as a troublesome and prolific weed in gravel paths.—Fl. all the summer. Perennial.

5. *S. Bóydii* (Braemar Pearl-wort).—Glabrous, densely tufted, forming cushions; *internodes* very short; *leaves* recurved; *peduncles* short, erect; *sepals* 4 or 5, always erect; *petals* absent; *capsule* globose.

SAGÍNA PROCÚMBENS, *and* S. APÉTALA.

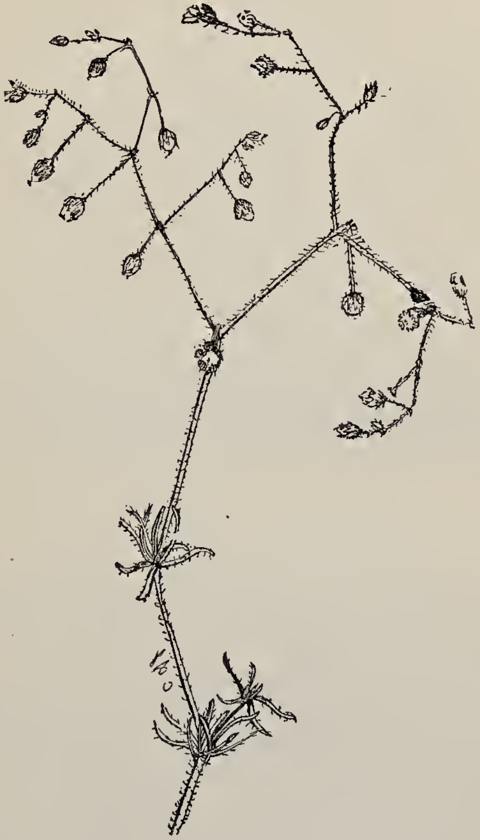
—A very distinct form, found in Braemar. Perennial.

** *Sepals, petals, styles, and valves of capsules usually 5: stamens 10: petals at least half as long as sepals.*

6. *S. Linnǽi* (Alpine Pearl-wort) distinguished from *S. procúmbens* by its longer *petals*, 10 *stamens* and *sepals* adpressed to the capsule.—Highland mountains; rare.—Fl. June—August. Perennial.

7. *S. nivális* (Snow Pearl-wort).—Glabrous, densely tufted; *leaves* acuminate; *pedicels* always erect; *petals* smaller than in *S. Linnǽi.*—Highland mountains; very rare.—Fl. June—August. Perennial.

8. *S. subuláta* (Awl-shaped Pearl-wort).—Glandular-hairy, tufted; *leaves* linear, awned, ciliate; *pedicels* curved after flowering. Closely allied to *S. Linnæi.*



SPÉRGULA ARVÉNSIS (*Corn-Spurrey*).

—Dry places; frequent.—Fl. June—August. Perennial.

9. *S. nodósa* (Knotted Spurrey).—The largest and largest-flowered species, 3—4 in. high, glabrous

or glandular-hairy; *upper leaves* tufted; *peduncles* axillary, always erect, 1—2-flowered; *flowers* ¼ in. across; *petals* much longer than the sepals.—Wet sandy places; common.—Fl. July, August. Perennial.

10. Spérgula (Spurrey).—Annual herbs with forked *branches;* whorled *leaves* with small membranous *stipules; flowers* in panicled cymes, pentamerous; *petals* entire; *seeds* numerous. (Name from the Latin *spargo*, I scatter, from scattering its seeds.)

1. *S. arvénsis* (Corn Spurrey).—More or less pubescent and viscid; *stem* 6—18 in. high, with many knee-like bends; *leaves* cylindrical, rather fleshy; *flowers* white, ¼ in. across, on slender stalks which bend down in fruit.—A common weed in sandy cornfields, and occasionally cultivated.—Fl. June—August. Annual.

11. Búda (Sandwort-Spurrey).—Prostrate plants, differing chiefly from *Spérgula* in having only three valves to their *capsules*, and generally three *styles*. (Name of unknown etymology.)

1. *B. rúbra* (Field Sandwort-Spurrey).—A small, branching, pubescent plant; *leaves* linear, flat, pointed; *stipules* united, lanceolate, silvery, torn; *flowers* rosy, ¼ in. across.—Common in sandy places.—Fl. June—September. Annual.

2. *B. marína* (Seaside Sandwort-Spurrey).—A nearly allied, glandular-pubescent form; *leaves* fleshy, blunt; *stipules* broadly triangular, usually entire; *flowers* pink with a white base; *petals* shorter than the sepals; *stamens* less than 10.—Near the sea.—Fl. June—September. Annual.

3. *B. média* (Perennial Sandwort-Spurrey).—A

nearly allied, but glabrous, larger, and stouter form; *flowers* ½ in. across; *petals* lilac or white, as long as the sepals; *stamens* 10.—Muddy salt-marshes.—Fl. June—September. Perennial.

4. *B. rupéstris* (Rock Sandwort-Spurrey).—A nearly allied, but glandular-pubescent form, with *leaves* fascicled and pointed, which occurs rarely on rocks near the sea.—Fl June—September. Perennial.

12. Polycárpon (All-seed).—Annual herbs with flat *leaves;* membranous *stipules;* minute *flowers* in crowded, bracteate cymes; *sepals* keeled; *petals* emarginate; *stamens* 3—5; *styles* 3; *ovules* many. (Name from the Greek *polús*, many, *kárpos*, fruit.)

1. *P. tetraphýllum* (Four-leaved All-seed).—A small prostrate branched plant; *lower leaves* in whorls of 4, *upper* opposite; *flowers* many, minute, greenish-white; *stamens* 3.—On the south-west coast; rare.—Fl. June, July. Annual.

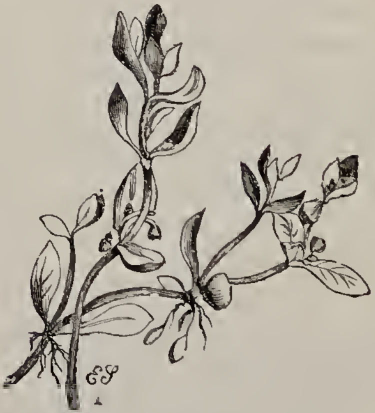
Ord. XIII. Portuláceæ.—The Purslane Family.

Smooth, succulent herbs or shrubs with simple, entire *leaves;* and monosymmetric *flowers* opening only during sunshine. *Sepals* 2, united at the base; *petals* usually 5; *stamens* 3—5; *carpels* 3, united into a 1-chambered *ovary*, with a *style* usually 3-fid, few *ovules* and basal *placentation.* The *capsules* open either transversely or by 3 valves. Many species have large showy flowers; but those of the British representatives of the Order are small and white. The common Purslane (*Portuláca olerácea*) has been cultivated in warm countries as a pot-herb from very early times, and occurs as a weed at Richmond, Surrey.

*1. Claytónia.—*Petals* free; *stamens* 5.
2. Móntia.—*Petals* united at the base; *stamens* 3.

*1. Claytónia.—Naturalised North American plants with stalked *radical leaves*, exstipulate; *flowers* in terminal cymes; *sepals* 2, united at the base, persistent; *petals* 5, not united; *stamens* 5, epipetalous; *capsule* 3-valved, 3-seeded. (Named in honour of John Clayton, an early collector in Virginia.)

1.* *C. sibírica.*—Often a foot high; *radical leaves* ovate, acuminate; *cauline leaves* opposite, sessile; *petals* bifid.—A garden escape.—Fl. April—July. Annual.



MÓNTIA FONTÁNA (*Water Blinks*).

2.* *C. perfoliáta*, 4—12 in. high; *radical leaves* rhomboid, fleshy; *cauline leaves* connate; *petals* nearly or quite entire.—A garden escape.—Fl. April—July. Annual.

2. Móntia (Blinks).—A small annual herb; *leaves* opposite, or nearly so; *flowers* solitary or in few-

flowered cymes; *sepals* 2, united at the base, persistent; *corolla* of 5 united petals, 3 smaller than the rest, *tube* split to the base in front; *stamens* 3, inserted in the throat of the corolla; *stigmas* 3, *capsule* 3-valved, 3-seeded. (Named in honour of J. de Monti, an Italian botanist.)

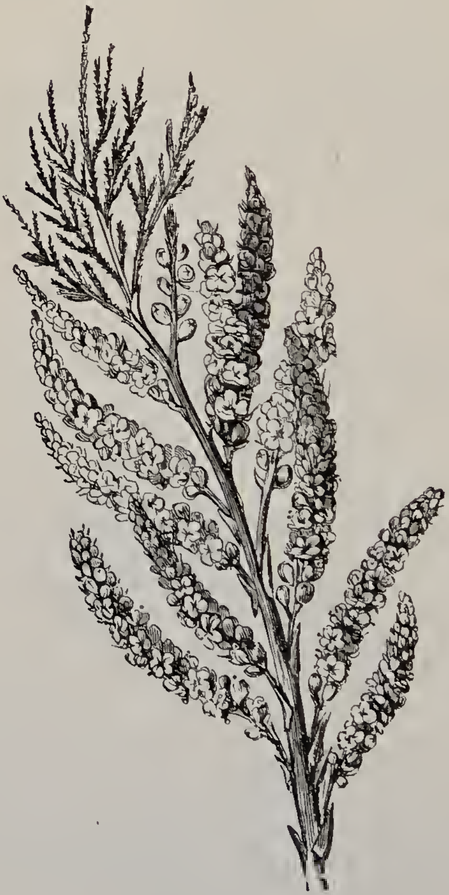
1. *M. fontána* (Water Blinks).—The only species, an unpretending little plant, tufted and pale green, with spathulate entire *leaves*, well marked by the above characters and common in wet places.—Fl. May—August. Annual.

ORD. XIV. TAMARISCINEÆ.—THE TAMARISK FAMILY.

Shrubs with whip-like *branches*, minute scale-like *leaves*, and lateral spikes of small *flowers*; *sepals* 5, rarely 4, imbricate, persistent; *petals* 5, rarely 4; imbricate; *stamens* 4—10, with versatile anthers; *capsule* 3—5-valved, 1-chambered; *seeds* many, tufted with down at the extremity. They are found only in the eastern half of the northern hemisphere, and are most numerous on the shores of the Mediterranean; but though preferring the seaside, they are not unfrequently found on the banks of rivers, and occur, also, in the desert, especially where the soil is impregnated with salt, as in the neighbourhood of Mount Sinai, where a species of Tamarisk, very like the common one, produces a sugary substance called Manna by the Arabs. The bark is astringent, and several species are remarkable for the large quantity of sulphate of soda contained in their ashes, and for the galls which they bear on their branches. These are highly astringent, and are used both in medicine and in dyeing.

*1. TÁMARIX.—*Styles* 3—4, spreading; *stigmas* feathery; *seeds* basal. (Name from Tamaris, a river in Spain, now the Tambra, where Tamarisk abounds.)

1.* *T. gállica* (Common Tamarisk).—A handsome evergreen shrub or small tree, with long flexible reddish *branches*, and closely adpressed scale-like *leaves* which give the tree a light feathery appearance. The *flowers* are rose-colour.—Though extensively planted

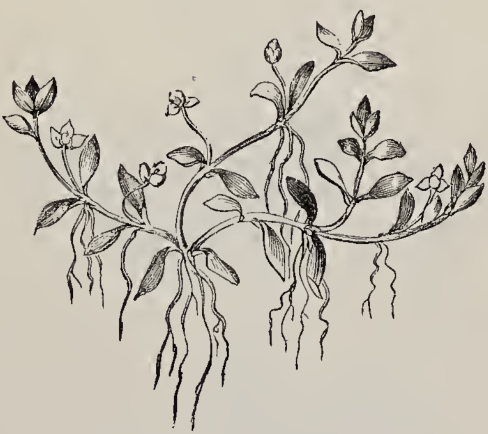


TÁMARIX GÁLLICA (*Common Tamarisk*).

on the south and east coasts, this shrub is not indigenous.—Fl. July—September.

ORD. XV. ELATÍNEÆ.--THE WATERWORT FAMILY.

Mostly minute aquatic annual herbs, with prostrate *stems*, rooting at their nodes; and opposite, stipulate *leaves; sepals, petals,* and *carpels* 2—5, each; *sepals* free or united; *stamens* equalling, or twice as many as, the petals; *ovary* syncarpous, 2—5-chambered, with as many *styles* and *valves* to the ripe *capsule; seeds* wrinkled, numerous; *placentation* axile. These plants are found in most parts of the world.



ELATÍNÉ HEXÁNDRA (*Six-stamened Waterwort*).

1. ELATÍNÉ (Waterwort).—Very small glabrous plants; *leaves* spathulate; *flowers* minute, axillary; *seeds* cylindric, furrowed, and transversely striated. (Name of Greek origin.)

1. *E. hexándra* (Six-stamened Waterwort).—A minute plant, forming turfy beds on the margin of

lakes, or entirely submersed. When left by the subsiding water it assumes a bright red hue. *Flowers* inconspicuous, stalked, 3-merous; *stamens* 6. Rare. —Fl. July—September. Annual.

2. *E. Hydropíper* (Eight-stamened Waterwort, Water Pepper).—Differing in having sessile, 4-merous *flowers*; *stamens* 8. Growing in similar situations to the preceding, but even rarer.—Fl. July, August. Annual.

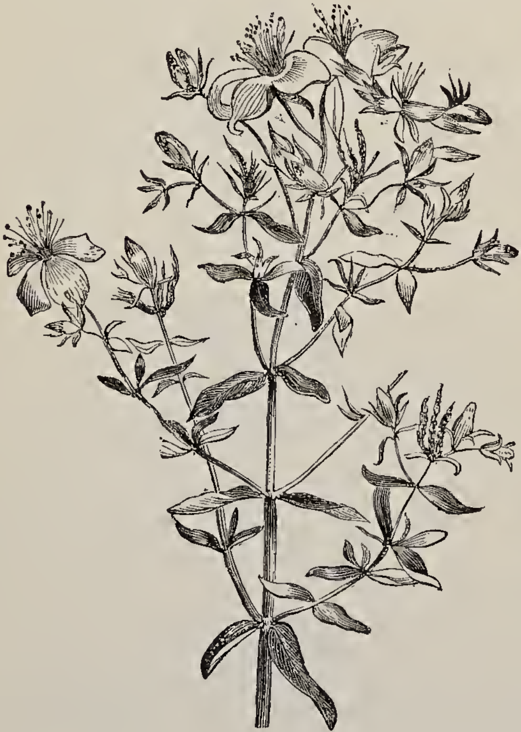
ORD. XVI. HYPERICÍNEÆ.—THE ST. JOHN'S-WORT FAMILY.

Herbs, shrubs, or trees, with opposite, exstipulate, simple *leaves*, generally dotted with pellucid glands, and conspicuous yellow polysymmetric *flowers*, generally in cymes; *sepals* 5, rarely 4, imbricate; *petals* of the same number as the sepals, twisted when in bud; *stamens* 3 or 5, much branched near the base and known as polyadelphous; *carpels* 3—5, syncarpous; *styles* 3—5; *fruit* a capsule or nuculane, 3—5-chambered and valved, the *valves* curved inwards; *seeds* numerous, minute. Most of the species are aromatic and resinous, and some contain a yellow juice, which has purgative, astringent, and tonic properties. They occur in most parts of the world, the only British genus being that which gives the Order its name, *Hypéricum*.

1. HYPÉRICUM (St. John's-wort).—*Leaves* sessile; *flowers* in cymes; *sepals* 5; *petals* 5, usually very oblique; *stamens* 3 or 5, much branched; *styles* 3, rarely 5; *fruit* 3 or 5-chambered. (Name from the Greek *hupereikon*, Pliny also using *hyperícum*, though usage has made it *hypéricum*.)

** Shrubs : sepals unequal : petals deciduous : stamens 5, branched at the base.*

1. *H. Androsæmum* (Tutsan).—A handsome, shrubby, glabrous plant, 2—3 feet high; *stem* compressed; *leaves* large, ovate, with a strong resinous smell, which they retain for some time after drying; *flowers* $\frac{3}{4}$ in. across, in conspicuous cymes; *petals* very oblique; *styles* 3, recurved; *fruit* glossy, black, berry-like.—Woods and hedges; not common, except in Devon and Cornwall.—Fl. June—August. Perennial.



HYPÉRICUM PERFORÁTUM (*Perforated St. John's-wort*).

2.* *H. hircínum*, a taller, more-branched shrub, with *flowers* 1½ in. across and narrow, acute, deciduous *sepals*, occurs in shrubberies, but is not indigenous.—Fl. July—September. Perennial.

3.* *H. elátum*, a closely allied species with a 2-edged *stem* and winged *peduncle*, occurs under similar circumstances.

4.* *H. calycínum* (Large-flowered St. John's-wort, Park-leaves).—A low glabrous shrub, about a foot high; *stem* square; *leaves* 2—4 in. long; oblong, blunt, leathery; *flowers* solitary, terminal, 3—4 in. across, very handsome; *styles* 5.—Common in gardens and shrubberies, and naturalised in several places.—Fl. July—September. Perennial.

** *Herbs: sepals united, not fringed: petals persistent: stamens* 3, *branched at the base: styles* 3.

5. *H. perforátum* (Common St. John's-wort).—*Stem* erect, 2 feet high, 2-edged; *leaves* elliptic-oblong, copiously dotted with pellucid glands, veins opaque; *sepals* erect, lanceolate, acute.—Woods and hedges; common. This plant and its congeners derive their popular name from coming into flower about the feast of St. John Baptist (O.S.)—Fl. July—September. Perennial.

6. *H. dúbium* (Imperforate St. John's-wort).—Very like the last, but with *stem* 4-sided, with 4 elevated lines; *leaves* with pellucid veins, but few glands; *sepals* reflexed, ovate, blunt, with black glands on the back.—Moist places; not common.—Fl. July, August. Perennial.

7. *H. quadrátum* (Square-stalked St. John's-wort).—An allied species with 4-winged, branched *stem*; *leaves* with many pellucid glands and veins; and *sepals* erect, lanceolate, acuminate.—Wet places; common.—Fl. July, August. Perennial.

8. *H. undulátum* (Wavy St. John's-wort).—

Another closely-allied form, with a 4-edged *stem ; leaves* with wavy edges, many pellucid glands and veins; *black glands* on the edges of the stem, the under surface of the leaves, and the sepals ; *flowers* in loose cymes ; and *sepals* erect, ovate-lanceolate, acuminate.—In bogs in Devon and Cornwall; rare.—Fl. July. Perennial.

9. *H. humifúsum* (Trailing St. John's-wort).—A prostrate, glabrous species ; *stems* spreading, slender, 2-edged, 3—9 in. long ; *leaves* oblong, obtuse, with minute pellucid glands and black glands under their revolute margins ; *sepals* unequal ; *stamens* 5—7-branched.—Walls and gravelly banks; common.—Fl. July, August. Perennial.

*** *Herbs : sepals fringed with glands ; stamens* 3, *branched : styles* 3.

10. *H. linarifólium* (Narrow-leaved St. John's-wort).—*Stem* erect, terete, 6—12 in. high ; *leaves* linear, blunt, revolute ; *sepals* lanceolate, acute, with glandular teeth and black glands below ; *stamens* about 10-branched.—Devon, Cornwall, and Jersey ; very rare.—Fl. July, August. Perennial.

11. *H. púlchrum* (Small Upright St. John's-wort).—A slender, glabrous plant ; *stem* erect, round, 12—18 in. high ; *leaves* cordate-amplexicaul, with pellucid glands ; *flower-buds* stained with red ; *sepals* obtuse, fringed with sessile glands ; *petals* fringed with glands.—Heaths and woods ; common.—Fl. July, August. Perennial.

12. *H. hirsútum* (Hairy St. John's-wort).—*Stem* erect, round, hairy, about two feet high ; *leaves* slightly stalked, pubescent, with pellucid glands ; *sepals* narrow, acute, fringed with stalked glands.—Woods, especially on calcareous soil.—Fl. July, August. Perennial.

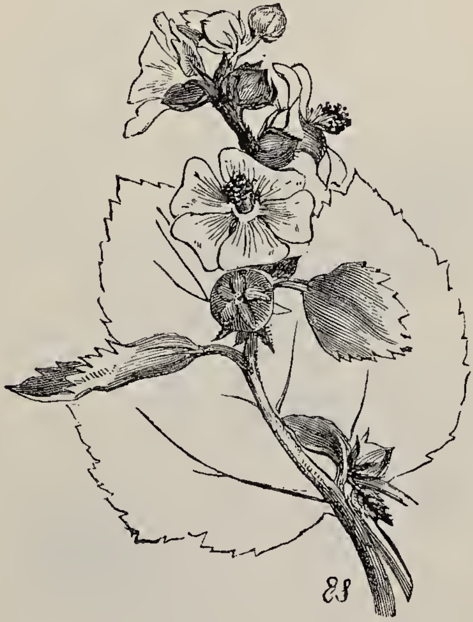
13. *H. montánum* (Mountain St. John's-wort).—A similar plant, but glabrous, with sessile *leaves*, with black glands on their margins.—Limestone hills; not common.—Fl. July, August. Perennial.

14. *H. elódes* (Marsh St. John's-wort).—A shaggy plant; *stems* creeping, ascending; *leaves* roundish, densely clothed in shaggy down; *flowers* few, pale yellow; *sepals* fringed with red-stalked glands.—Spongy bogs; common.—Fl. July, August. Perennial.

Ord. XVII. Malváceæ.—The Mallow Family.

A large and important family of herbaceous plants, shrubs, and trees, with scattered, stipulate *leaves*, which are palmately veined and lobed. The *flowers* are polysymmetric and generally conspicuous, and are in most cases furnished with an *epicalyx* or *involucel* of bracts; *sepals* 5, more or less united at the base, valvate in bud; *petals* 5, twisted in bud; *stamens* originally 5, but much branched and carried up on a tube, so as to appear indefinite and monadelphous; *carpels* many in a whorl, generally united, each 1-seeded; *styles* as many as the carpels, distinct or united; *fruit* a regma. There are about a thousand species in the Order, mostly natives of tropical regions, where they form a large proportion of the vegetation, the number of species gradually decreasing towards the poles. They all agree in containing a large quantity of mucilage, and being totally destitute of unwholesome qualities. In some species, this mucilage, extracted by boiling the plant, especially the root, is employed medicinally in allaying irritation, both external and internal, as, for instance, in the manufacture of guimauve lozenges. The inner bark of several tropical species is used as a substitute for hemp; but the less strong, though most valuable of all textile substances, cotton, consists of the long unicellular hairs on the seeds of various species of the genus *Gossýpium*, which belongs to this Order. The Hollyhock (*Althǽa rósea*), several species of *Hibíscus*, *Málopé*, and other genera, are favourite ornamental garden flowers.

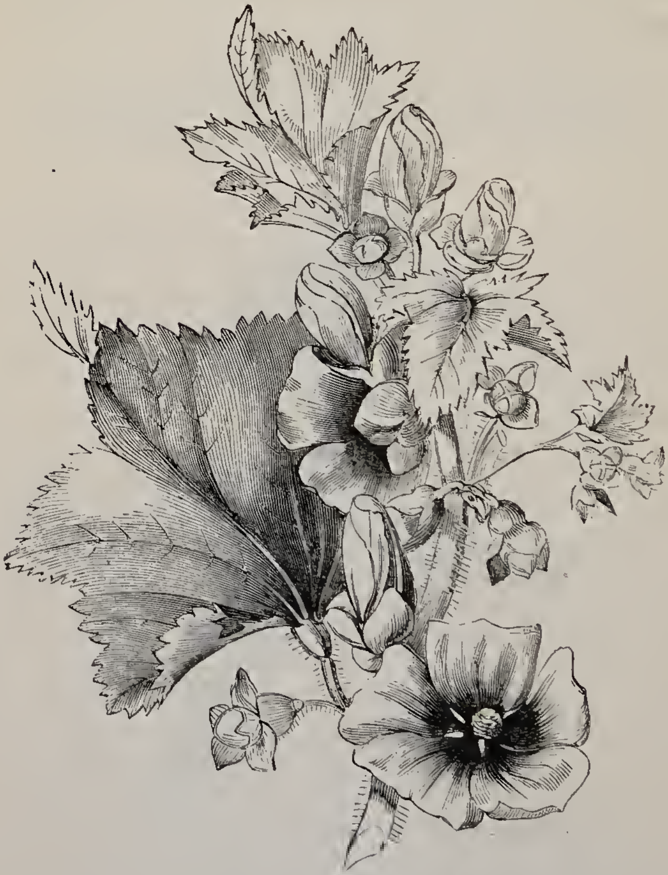
1. ALTHǼA. *Epicalyx* of 6—9 connate bracts.
2. LAVATÉRA. *Epicalyx* of 3 connate bracts.
3. MÁLVA. *Epicalyx* of 3 distinct bracts.



ALTHǼA OFFICINÁLIS (*Common Marsh Mallow*).

1. ALTHǼA (Marsh Mallow).—Hairy herbs, with lobed *leaves;* axillary or racemose *flowers;* an *epicalyx* of 6—9 united bracts; *sepals* and *petals* 5 each; *staminal tube* long; *styles* many; *fruit* dividing into indehiscent 1-seeded cocci. (Name from the Greek *áltho*, I cure, from its healing properties.)

1. *A. officinális* (Common Marsh Mallow).—Hoary with stellate down; *stem* 2—3 feet high; *leaves* shortly stalked, thick, sub-orbicular, 3—5-lobed; *flowers* in axillary cymes, 1—2 in. across, blush-pink.—Marshes near the sea; local. The starry down is a beautiful object for the microscope.—Fl. August, September. Perennial.



LAVATÉRA ARBÓREA (*Sea Tree-Mallow*).

2. *A. hirsúta* (Hispid Marsh Mallow).—A hispid or bristly plant, about a foot high, with *leaves* long-stalked, reniform, 3—5-lobed, and solitary axillary rose-pink *flowers*, an inch across, occurs near Cobham, Kent.—Fl. June, July. Annual or biennial.

2. LAVATÉRA (Tree-Mallow).—Tall hairy plants, with more or less lobed *leaves*; axillary *flowers*; an *epicalyx* of 3 united bracts; and other characters mainly as in *Althǽa*. (Named in honour of the two Lavaters, Swiss physicians, friends of Tournefort.)

1. *L. arbórea* (Sea Tree-Mallow).—A tall and handsome plant, 3—12 feet high, with a thick woody *stem*; soft, downy, 7-angled *leaves*; and abundance of rose-coloured *flowers*, with darker veins, 1½ in. across, resembling those of the Common Mallow (*Málva sylvéstris*), but of a deeper colour towards the centre.—On sea-cliffs and stacks; rare.—Fl. July—October. Biennial.

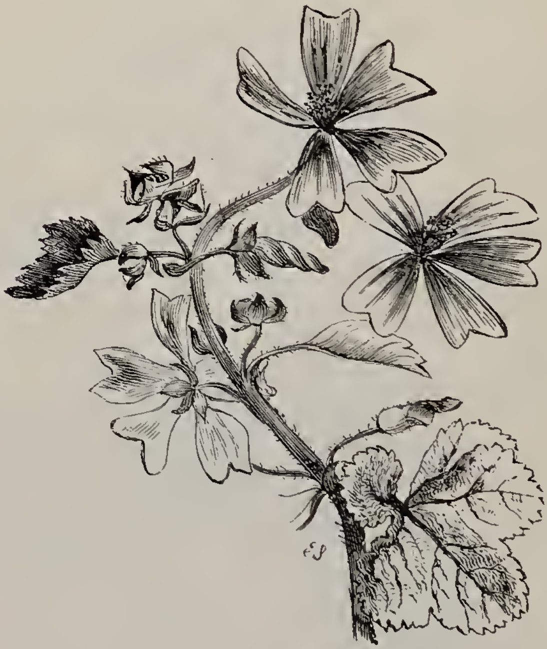
2.* *L. sylvéstris*, a smaller, herbaceous species, closely resembling *Málva sylvéstris*, but differing in being hispid with stellate hairs, giving it a grey-green colour, and in having the bracts of its *epicalyx* united, occurs, perhaps introduced in ballast, in the Scilly Isles.—Fl. June, July. Annual or biennial.

3. MÁLVA (Mallow).—Glabrous or hairy herbs; *leaves* angled or lobed; *flowers* axillary; *epicalyx* of 3 distinct bracts; and other characters mainly as in the two preceding genera. (Name from the Greek *málaké*, soft, in allusion to its emollient mucilage.)

1. *M. moschàta* (Musk-Mallow).—Hairy, light green; *stem* erect; *leaves* long-stalked, deeply palmately 5—7-lobed, lobes pinnatifid, with a faint musky odour when rubbed, especially in hot weather; *flowers* large, handsome, rose-coloured, crowded

towards the top of the stem; *fruit* hairy.—Hedges and borders of fields; frequent. A white variety is occasionally found and is grown in gardens.—Fl. July, August. Perennial.

2. *M. sylvéstris* (Common Mallow).—A robust, erect, branched, herbaceous, downy plant; *leaves* lobed, but not deeply divided, crenate-serrate; *flowers* showy, lilac with crimson veins; *fruit* glabrous.—Waste ground; common.—Fl. June—September. Perennial.



MÁLVA SYLVÉSTRIS (*Common Mallow*).

As the season advances, the leaves lose their first deep-green hue, and the stems put on a ragged appearance. Children gather and eat the unripe seed-vessels, which they call "cheeses": they are insipid, but not unwholesome. The pollen is a beautiful object for the microscope, being studded with minute prickles, which cause it to adhere to the hairy legs of bees visiting the flowers. The crimson veins on the petals serve the insects as "honey-guides": the stamens ripen and discharge their pollen before the circle of styles mature their stigmas, and subsequently these styles bend over so that the stigmas can collect pollen, brought from other flowers by insects, off the withered recurved filaments.

3. *M. rotundifólia* (Dwarf Mallow).—A smaller prostrate species; *leaves* roundish, heart-shaped, with 5 shallow lobes; *flowers* less than an inch across, pale pink, without honey-guides; *fruit* downy.—Waste places, common. Its flowers are seldom visited by insects, and mature their anthers and stigmas simultaneously. — Fl. June—September. Perennial.

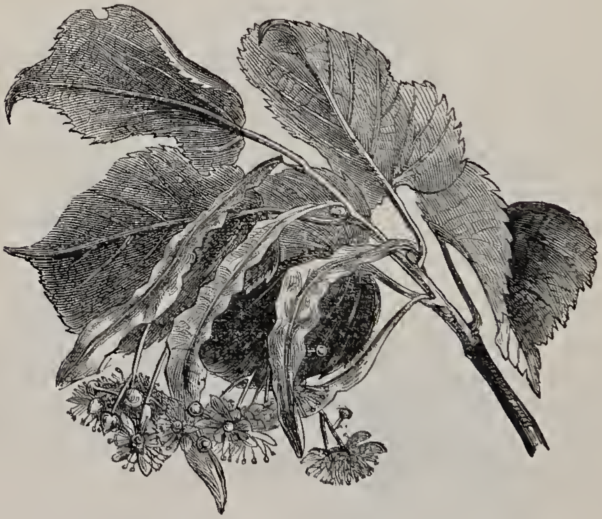
**M. verticilláta*, an erect species with *petals* not longer than its sepals; **M. pusílla*, a prostrate annual form resembling *M. rotundifólia*, but with shorter *petals*; and **M. parviflóra*, a branched form with acutely-lobed *leaves* and short *petals*, occur occasionally, but are not indigenous.

ORD. XVIII. TILIÁCEÆ.—THE LINDEN FAMILY.

A considerable family, mostly tropical, of trees, shrubs, and, rarely, herbs; *leaves* scattered, stipulate; *flowers* cymose, polysymmetric; *sepals* 5, rarely 4, valvate when in bud; *petals* equalling the sepals in number, often with a scale and pit at their base, sometimes wanting; *stamens* numerous; *carpels* 2—10, syncarpous; *style* single; *stigmas* and chambers of *ovary* as many as carpels; *fruit* dry or baccate, with one or more seeds in each chamber.

They all have a mucilaginous, wholesome juice, and many of them are remarkable for the toughness of their fibrous inner bark. Jute, for example, is the product of the East Indian genus *Córchorus*, and Russian bast is obtained from the Linden (*Tília*).

1. Tília (Linden). Trees with oblique, cordate, serrate *leaves ; cymes* with a large leafy bract adherent to the peduncle; *sepals* 5, deciduous; *petals* 5 ; *stamens* many ; *ovary* 5-chambered, *capsule* 1-chambered, indehiscent, 1—2-seeded. (Name, the Latin name of the tree. The English name, now generally written Lime, was Line in Shakespere's time.) A peculiar interest attaches to the Linden from its having given a name to the immortal Linnæus. It is questionable whether any species of the genus is indigenous in Britain.



TÍLIA VULGÁRIS (*Common Lime*).

1. *T. platyphýllos* (Large-leaved Linden), a large tree, with its *young shoots* hairy; *leaves* thin, downy beneath, longer than their stalks; and *fruit* woody, 5-angled and downy.—Old rocky woods in the West of England.—Fl. June, July.

2.* *T. vulgáris* (Common Lime), the chief form in our parks and avenues, glabrous except woolly tufts at the branching of the veins on the under side of the leaves; *leaves* thin, twice as long as their stalks; *fruit* woody, not ribbed or angled when ripe, downy.—Hedgerows and plantations.—Fl. July.

3. *T. cordáta* (Small-leaved Linden), which has most claim to be considered indigenous, glabrous except woolly tufts, as in the last; *leaves* thick, leathery, scarcely longer than their stalks; *fruit* faintly ribbed, thin, brittle, downy.—Old woods.—Fl. July, August.

ORD. XIX. LÍNEÆ.—THE FLAX FAMILY.

Herbaceous, rarely shrubby plants, with slender *stems;* narrow, simple, entire *leaves;* and polysymmetric, 3—5-merous *flowers; sepals* imbricate, persistent; *petals* twisted when in bud, falling off very soon after expansion; *stamens* alternate with the petals, united at the base into a ring with staminodes between them; *capsule* approaching a globular form, 3—5-chambered, each chamber incompletely divided by the in-growth of the midrib of the carpellary leaf; *seeds* 2 in each chamber. The flowers are in many cases highly ornamental, providing our gardens with vivid blue, crimson, orange, and white blossoms; but the most useful characters of the Order are the toughness of the fibre contained in their stems, the mucilaginous nature of the outer coat of their seeds, and the oil obtained from the seeds themselves when crushed. The flax of commerce, *Línum usitatíssimum*, has for ages supplied the valuable textile substance which derives from it the name "linen"; the mucilaginous seeds are employed in "linseed" poultices; and, when crushed, yield "linseed oil," the chief oil used in painting, and the refuse "oilcake," used as food for cattle.

1. Rádiola.—*Flowers* tetramerous; *sepals* trifid.
2. Línum.—*Flowers* pentamerous; *sepals* entire.

1. Rádiola (Flax-seed, All-seed).—A minute annual herb; *stem* filiform, repeatedly forked; *flowers* terminal and in the forks; *sepals* 4, deeply and acutely 3-cleft, united below; *petals* 4, fugacious. (Name, a diminutive from the Latin *rádius*, a ray, from the radiating branches.)

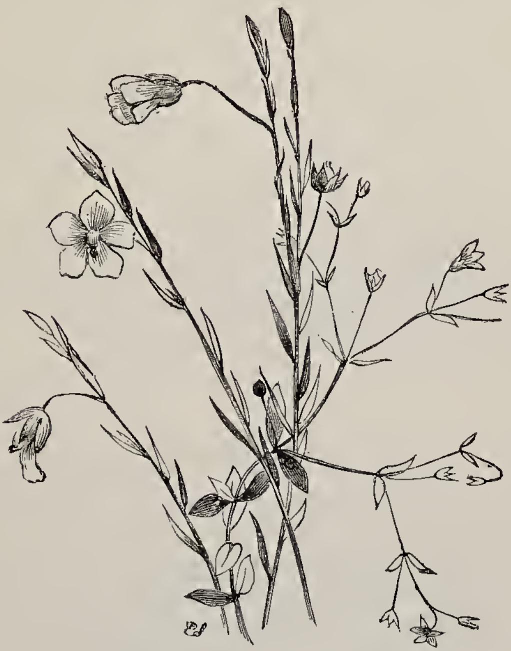
RÁDIOLA LINÓÏDES (*Thyme-leaved Flax-seed*).

1. *R. linóïdes* (Common Flax-seed), the only species, a minute plant, never exceeding four inches in height, bearing ovate-acute *leaves* and a large number of minute white flowers, which, as the plants generally grow many together, often prevent its being overlooked.—Damp heaths; frequent.—Fl. July, August. Annual.

2. Línum (Flax).—Herbs or small shrubs; *leaves* scattered, or rarely opposite; *flowers* in cymes, pen-

tamerous; *sepals* 5, entire; *petals* 5, fugacious; *disk* of 5 glands opposite the petals; *stamens* 5, with 5 staminodes between them; *ovary* 5-chambered, chambers divided almost into 2; styles 5; *ovules* 10; *fruit* capsular. (Name, the Latin name of the plant, perhaps of Keltic origin.)

1. *L. cathárticum* (Cathartic Flax).—A very slender, much-branched, glabrous plant, rarely exceeding 6 in. in height; *leaves* mostly opposite, linear-oblong; *flowers* numerous, ¼ in. across, white, in dichasial cymes, drooping before expansion; *sepals* pointed, 1-veined.—Dry pastures; common.—Fl. June—August. Annual.



LÍNUM ANGUSTIFÓLIUM, *and* L. CATHÁRTICUM.

2. *L. perénné* (Perennial Flax).—A slender plant

about a foot high, with wiry *stems;* very narrow, scattered, sessile *leaves*, tapering to a point; *sepals* obovate, obtuse, obscurely 5-veined, glabrous; *petals* a beautiful sky-blue, but so fugacious as scarcely to bear being gathered. Chalky places; rare.—Fl. June, July. Perennial.

3. *L. angustifólium* (Narrow-leaved Flax).—Like the last; but irregularly branched and distinctly marked by its sharp-pointed, elliptical, 3-veined *sepals*, and by the lighter, more lilac, blue of its *flowers.*—Dry pastures in the southern and western counties; frequent.—Fl. May—September. Annual or perennial.

4.* *L. usitatíssimum* (Common Flax), though not a native plant, is not unfrequently found as an escape from cultivation. It is distinguished from the preceding by its *stems* being mostly solitary, instead of several from the same root, by its somewhat broader and more distant *leaves*, by its ciliate, ovate, 3-veined, pointed *sepals*, by its notched, blue *petals*, and by its larger size.—Fl. June, July. Annual.

ORD. XX. GERANIÁCEÆ.—THE CRANE'S-BILL FAMILY.

A considerable Order, two tribes of which, the *Oxalídeæ* and *Balsamíneæ*, are sometimes treated as distinct Orders. They are mostly herbaceous; their *leaves* are usually stipulate; *flowers* conspicuous, either polysymmetric or monosymmetric, and usually pentamerous; *sepals*, *petals*, and *carpels* 3—5 each; *stamens* 5—10; *ovary* 3—5-chambered, with 1, 2, or more *seeds* in each chamber. The Order takes its name from the elongated axis or carpophore, to which the styles of the members of the Tribe *Gerάnieæ* adhere in the flower, and from which they separate and curl up when the carpels are ripe. The members of this Tribe are often astringent and aromatic, abounding in volatile oil; those of the *Oxalídeæ* are remarkable for the quantity of oxalic acid contained in their foliage, and some have edible tubers. All three tribes furnish beautiful plants to our gardens. Most of the species grown as Geraniums, which are derived mainly from South Africa, belong truly to the allied genus *Pelargónium*, which differs in having the posterior sepal wider than the rest, and provided with a tubular spur containing nectar, which is adherent to the flower-stalk, so that the flower is monosymmetric.

Tribe I. GERÁNIEÆ.—*The Crane's-bill Tribe.—Flowers polysymmetric: sepals imbricate: fruit a beaked regma separating into five indehiscent cocci: styles persisting as awns.*

1. GERÁNIUM.—*Stamens* 10; *awns* recurved, smooth.
2. ERÓDIUM.—*Stamens* 5; *staminodes* 5; *awns* spiral, bearded.

Tribe II. OXALÍDEÆ.—*The Wood-Sorrel Tribe.—Flowers polysymmetric: sepals imbricate: stamens* 10: *fruit a capsule.*

3. ÓXALIS.—*Leaves* ternate: *seeds* with an elastic testa.

Tribe III. BALSAMÍNEÆ.—*The Balsam Tribe.—Flowers monosymmetric: sepals petaloid, the posterior spurred: stamens* 5: *fruit a capsule, bursting elastically.*

4. IMPÁTIENS.—*Leaves* simple; *sepals* 3; *petals* 3.

1. GERÁNIUM (Crane's-bill).—Herbs with swollen nodes, rarely shrubs; *leaves* simple, stipulate, lobed; *flowers* on 1—2-flowered axillary peduncles; *stamens* 10, 5 of which are alternately larger, and have glands

at their base; *styles* persisting as smooth awns which curve upwards from the long beak (carpophore) of the fruit. (Name from the Greek *géranos*, a crane, from the beaked fruit.)

* *Perennial.*

1. *G. sanguíneum* (Bloody Crane's-bill).—An exceedingly handsome plant with hairy *stems;* abundant foliage, *radical leaves* nearly round, with 7 deeply-cut lobes, each of which is 3-cleft, *cauline leaves* 5- or 3-lobed;[1] *flowers* 1—1½ in. across, crimson or pink, solitary, on long stalks.—Dry rocks and shores; not common.—Fl. July—September.

2.* *G. striátum* with slender, erect, hairy *stem*, 18 in. high, and 2-flowered *peduncles* bearing white, red-veined *flowers*, occurs as an escape.

3.* *G. nodósum*, a similar species, with glabrous *stem* and red *flowers*, is also an escape.

4.* *G. phæum* (Dusky Crane's-bill).—A tall, erect plant with *leaves* 5—7-lobed, serrate; dingy, purplish-black *flowers* with mucronate *sepals;* and *carpels* hairy below, wrinkled above, not uncommon in gardens, occurs also as an escape in plantations.—Fl. May, June. Perennial.

5. *G. sylváticum* (Wood Crane's-bill).—A tall, erect, hairy species; *leaves* palmate, 7-lobed, lobes cut and serrate; *flowers* purplish-blue or rose-colour; *petals* with bearded claws; *stamens* awl-shaped, fringed; *carpels* hairy; *fruit-stalks* erect.—Woods and pastures, chiefly in the north; rare.—Fl. June, July. Perennial.

6. *G. praténsé* (Meadow Crane's-bill).—The largest British species, erect, downy, sometimes 4

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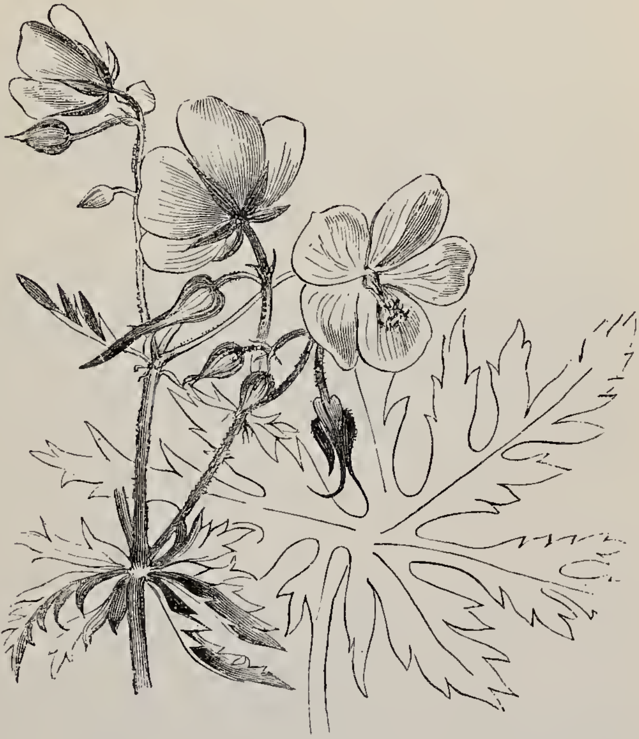
(1) Particular care should be taken when comparing specimens with the above descriptions, to examine the radical leaves, for the cauline leaves vary even on the same plant to such a degree as to defy description.

feet high; differing from the last in having stalks to the *cauline leaves;* narrow *stipules;* larger, blue-purple *flowers,* over an inch across; very large points to the *sepals;* more slender and less hairy *filaments;* and deflexed *fruit-stalks.*—Moist meadows and river-sides; common.—Fl. June—September. Perennial.



GERÁNIUM PRATÉNSÉ (*Meadow Crane's-bil.*).

7. *G. pyrenáïcum* (Mountain Crane's-bill).—*Stem* spreading, 2 feet high, downy, with long hairs intermixed; *radical leaves* reniform, 7—9-lobed, lobes oblong, obtuse, 3-cleft and toothed at the end: *flowers*

½ in. across; *sepals* mucronate; *petals* notched, twice as long, bright red.—Road-sides and meadows; uncommon, seldom indigenous.—Fl. June—August. Perennial.

** *Annual or biennial.*

8. *G. móllé* (Dove's-foot Crane's-bill).—Prostrate, very softly pubescent; *leaves* roundish, lobed and cut; *flowers* ⅓—½ in. across, rose-colour or lilac; *sepals* mucronate; *petals* bifid; *fruit* wrinkled, glabrous.—Fields and waste places; common.—Fl. all the summer. Annual.

9. *G. pusíllum* (Small-flowered Crane's-bill).—Resembling the last, but smaller, prostrate, very softly pubescent; *leaves* roundish, more deeply lobed; *flowers* ⅓ in. across, lilac; *sepals* mucronate; *petals* notched; *carpels* keeled, downy with adpressed hairs, not wrinkled.—Waste ground; common.—Fl. all the summer. Annual.

10. *G. rotundifólium* (Round-leaved Crane's-bill).—Also resembling *G. mólle*, downy, with more distant hairs; *flowers* ⅓—½ in. across, flesh-pink; *petals* not notched; *carpels* keeled, with spreading hairs, not wrinkled.—Waste places; not common.—Fl. June, July. Annual.

11. *G. disséctum* (Jagged-leaved Crane's-bill).—Hairy, not downy; *stems* spreading; *leaves* roundish, divided almost to the base in 5—7 segments with linear lobes; *peduncles* very short; *flowers* ¼—½ in. across, bright red; *sepals* with long points; *petals* bifid; *carpels* not wrinkled, with erect hairs.—Waste places; common.—Fl. all the summer. Annual.

12. *G. columbínum* (Long-stalked Crane's-bill).—*Stems* spreading, nearly glabrous; *branches* 1—2 feet; *leaves* similar to those of the last, but on much longer stalks; *peduncles* longer than the leaves; *pedicels* very long and slender; *flowers* ½—¾ in. across, often

drooping, bluish rose-colour ; *sepals* with long points, *petals* emarginate ; *carpels* with few small hairs.—Dry hedgerows ; not very common.—Fl. June, July. Annual.

13. *G. lúcidum* (Shining Crane's-bill).—A beautiful and distinct species, a few inches high, glabrous and glossy ; *stems* and *leaves* generally tinged with red ; *leaves* nearly round, 5-lobed ; *flowers* small, rose-colour ; *sepals* wrinkled, with long points ; *petals* shorter, entire.—Old walls and stony places ; common.—Fl. all the summer. Annual.

14. *G. Robertiánum* (Herb Robert).—One of the most generally diffused and best known species, well distinguished by its red, hairy, succulent, spreading *stems ;* ternately or quinately divided *leaves* with pinnatifid segments, acquiring in autumn the same reddish hue ; and bright pink elegantly-veined *flowers* ½ in. across, with long, pointed *sepals*, viscid with glandular hairs, and obovate, entire *petals.* There is a white-flowered variety. The whole plant has a strong smell.—Hedgerows and waste ground ; very common.—Fl. all the summer. Annual.

2. Eródium (Stork's-bill).—Herbs with swollen nodes ; *leaves* stipulate ; *flowers* on 1—many-flowered axillary peduncles ; *petals* rather unequal, sometimes deficient; *stamens* 5, with alternating staminodes, with glands at the base of the former ; *styles* persisting as spirally twisted awns furnished with long elastic bristles on the inner side.[1] (Name from the Greek *eródios*, a stork, from the beaked fruit.)

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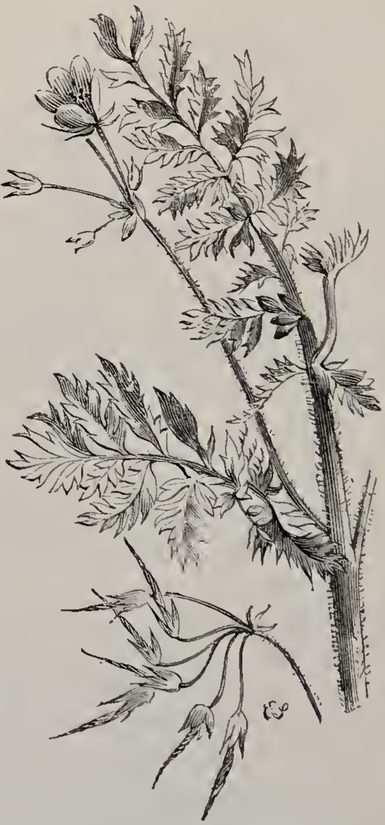
(1) These awns, which become spirally twisted when ripe, often spring to a considerable distance from the parent plant. Being hygroscopic they uncurl when moistened. The combined action of the awn and the bristles on it thus gives to the carpel the power of locomotion at every change in the moisture surrounding it, and serves to bury the seed-vessel. A twisted carpel, if moistened and laid on a sheet of paper, will soon crawl an inch or more away from the spot on which it was laid.

1. *E. cicutárium* (Hemlock Stork's-bill).—*Stems* prostrate, hairy; *leaves* bi-pinnatifid, with lanceolate stipules; *peduncles* many-flowered; *flowers* in umbellate cymes, rosy or white; *petals* entire, rather unequal, two often spotted at the base, fugacious.—Waste places, especially near the sea; common.—Fl. all the summer. Annual.



ERÓDIUM CICUTÁRIUM (*Hemlock Stork's-bill*).

2. *E. moschátum* (Musk Stork's-bill).—A larger and stouter species, of a deeper green, covered with spreading hairs, somewhat clammy to the touch, and emitting, when handled, a strong scent of musk; *leaves* less deeply cut, with broadly-ovate, obtuse stipules; *flowers* pink.—Waste places; rare, not indigenous inland.—Fl. June, July. Annual.

3. *E. marítimum* (Sea Stork's-bill).—A small plant, roughish, with minute hairs, and sending out several leafy *stems*, which lie remarkably close to the ground; the *leaves* are not pinnate, as in the other British species, but ovate, cordate, and crenately lobed; and the *peduncles* bear one or two minute, generally apetalous, *flowers*.—Sandy places near the sea, especially in the West of England; rare. Like many other seaside plants, it is not unfrequently met with

ÓXALIS ACETOSÉLLA (*Common Wood-Sorrel*).

in inland, mountainous districts, occurring plentifully on Dartmoor, in Devonshire, many miles from the sea. —Fl. all the summer. Perennial.

3. Óxalis (Wood-sorrel).—Acid herbs with sensitive, ternate *leaves; flowers* on axillary, 1- or more-flowered peduncles, polysymmetric; *sepals* 5, united below, imbricate; *petals* 5, often united below, convolute; *stamens* 10, monadelphous, the 5 outer ones shorter; *ovary* 5-chambered; *styles* 5; *fruit* a capsule; *seeds* with an elastic testa, which splits hygroscopically, throwing the body of the seed to a distance. (Name from the Greek *οξύς*, acid.)

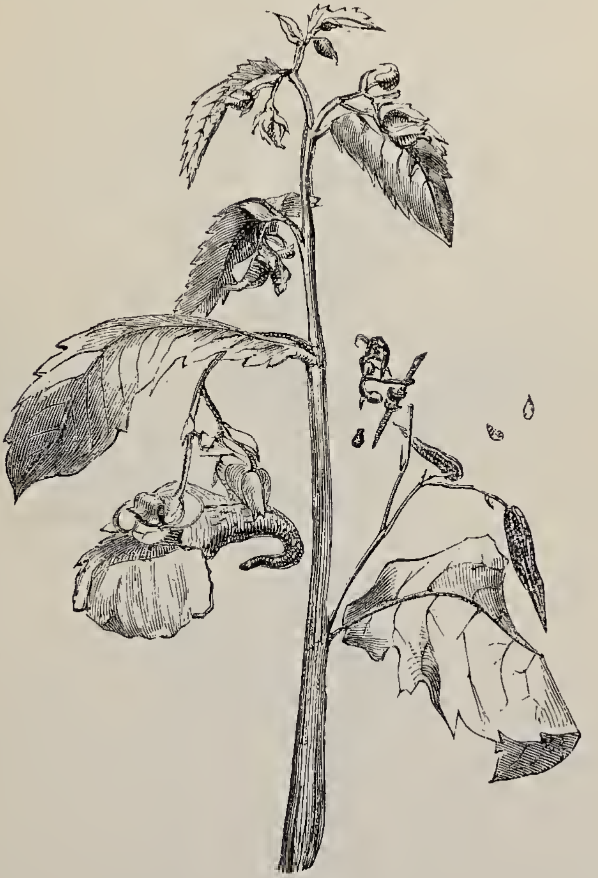
1. *O. Acetosélla* (Common Wood-Sorrel, Alleluia). —An elegant little plant with a creeping *rhizome* and delicate, radical, trefoil, hairy *leaves*, which, though not so sensitive as some foreign species, fold together vertically at night, being thus protected from radiated cold. The *peduncle* has two bracts about the middle and is single-flowered; and the *flowers* have obovate white or lilac-veined *petals*. Apetalous, cleistogene seed-yielding flowers are produced later in the season, as in the violets (see p. 89).—Woods and shady places; common.—Fl. April—August. Perennial.

2.* *O. corniculáta*, a downy plant with prostrate branched *stem* without runners, and 2—3-flowered *peduncles* bearing yellow *flowers*, may be indigenous in Devon and Cornwall.—Fl. June—September. Annual.

3.* *O. stricta*, a nearly glabrous erect plant with runners and 2—8-flowered *peduncles* bearing yellow *flowers*, occurring also in the west, is not indigenous. —Fl. July, August. Biennial.

4. Impátiens (Balsam).—Succulent herbaceous plants with simple *leaves* and monosymmetric *flowers;*

sepals 3, petaloid, deciduous, imbricate, the posterior one forming a wide-mouthed spur; *petals* 3, the anterior one broad, symmetrical, the two lateral ones unequally 2-lobed; *stamens* 5, with short coherent filaments; *ovary* 5-chambered, many-ovuled; *fruit* a capsule with 5 elastic valves. If the capsule be



IMPÁTIENS NOLÍ-TÁNGERE (*Balsam*).

touched when approaching ripeness, its valves instantaneously curl into a spiral form, and spring with considerable force many feet from the plant, dropping the seeds by the way. Cleistogene flowers also occur. (Name from the Latin *impatiens*, referring to the sudden movement of the valves of the capsule.)

1. *I. Noli-tángere* (Touch-me-not), an elegant plant 1—2 feet high; *stem* swollen at the nodes; *leaves* ovate, coarsely serrate, obtuse; *peduncles* 1—3-flowered; *flowers* large, yellow spotted with orange; *spur* slender, loosely recurved.—Moist shady woods and river banks in mountainous districts in the north; rare.—Fl. June—September. Annual.

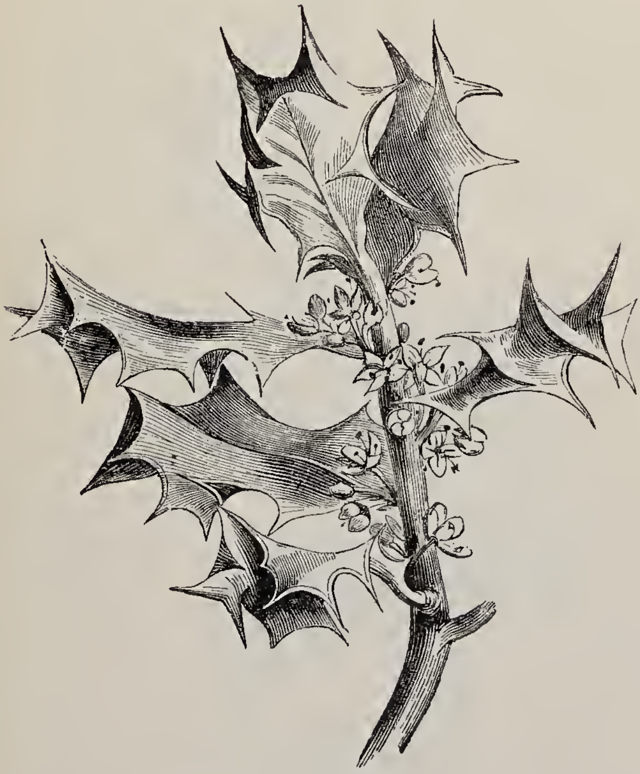
2.* *I. biflóra*, a North American species, 2—3 feet high, with acute, ovate, serrate *leaves*, orange *flowers*, and a *spur* closely recurved and emarginate, is naturalised by the Tillingbourne, the Wey, and the Thames in Surrey, the Colne in Middlesex, and Bucks and elsewhere.—Fl. June—August. Annual.

3.* *I. parviflóra*, a Russian plant, 6—18 in. high, with 3—12-flowered *peduncles*, and small yellowish *flowers* with a short straight *spur*, is naturalised in many places.—Fl. July—September. Annual.

ORD. XXI. ILICÍNEÆ.—THE HOLLY TRIBE.

This Order, which is also known as *Aquifoliáceæ*, consists of trees and shrubs with scattered, simple, and generally evergreen and leathery *leaves*, and axillary cymes of small, white, or greenish *flowers*; *sepals* 3—6, united, imbricate, persistent; *petals* 4—6, deciduous, imbricate; *stamens* equalling the petals in number, and alternate with them; *filaments* awl-shaped; *anthers* 2-chambered, opening lengthwise; *ovary* superior, 2—6-chambered; *style* short or absent; *stigma* nearly sessile, lobed; *fruit* drupaceous, fleshy, indehiscent, containing 2—6 bony, one-seeded "stones."

They occur in various parts of the world, the common Holly being the only European species. Nearly all the members of the Order possess astringent, tonic properties, the leaves of the Holly, for instance, being used as a substitute for quinine in cases of intermittent fever. The leaves of *Ílex Paraguayénsis*, a South American species, furnish Paraguay or Maté Tea, which is extensively used throughout South America. The tea itself is properly known as *yerba*



ÍLEX AQUIFÓLIUM (*Common Holly*).

de maté, *maté* being the name for the gourd which is used as a teapot. The leaves of the common Holly are used as tea by the peasantry in the Black Forest.

1. Ílex (Holly).—Trees and shrubs; *sepals* 4 or 5; *petals* 4 or 5, generally united as a rotate corolla; *stamens* 4 or 5, adherent to the corolla-tube; *stigmas* 4 or 5; *berry* round, containing 4 or 5 stones. (Name applied by the Latins to some tree, probably *Quércus Ilex*, the Holm Oak, but not to our Holly.)

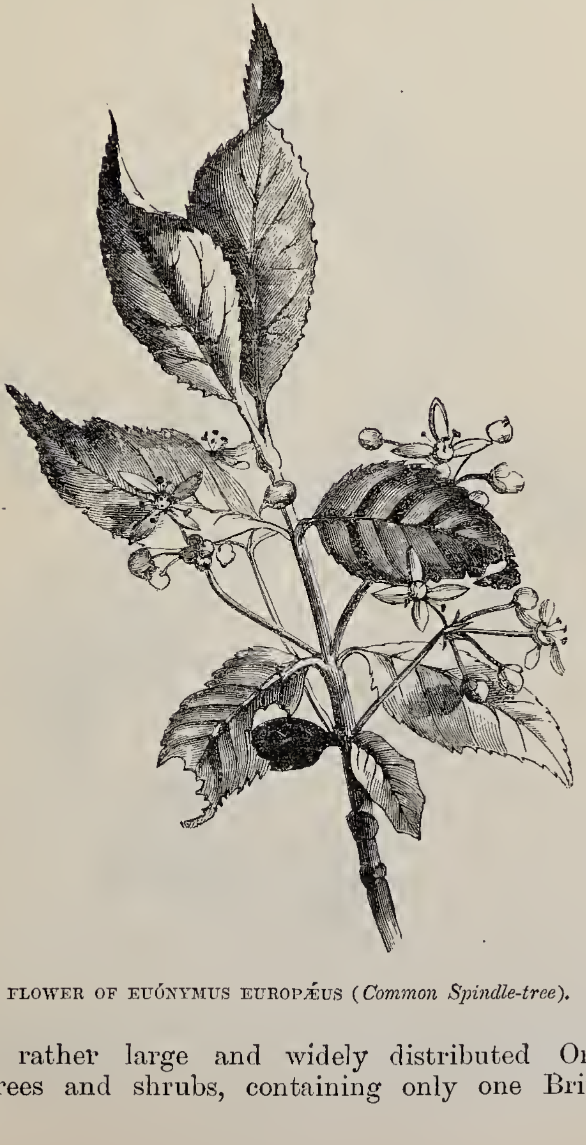
1. *I. Aquifólium* (Common Holly).—The only British species, a shrub or small tree, with smooth ash-grey bark and slightly downy twigs; *leaves* evergreen, glossy, with cartilaginous waved spinous margins, those on upper branches often having only the one spine at the apex; *flowers* white, sub-diœcious; *fruit* scarlet, rarely yellow. The wood, which is white, and remarkably close-grained, is much used by cabinet-makers for inlaying and ebonising; and the bark furnishes bird-lime. *The berries, it should be borne in mind, are* POISONOUS. The name *Aquifólium* means needle-leaved, and Holly may be a corruption of the word "holy," from the use to which its boughs are applied in ornamenting churches at Christmas. The Holly is particularly abundant on sandy soil, under the trees of our old forests.—Fl. May—August.

SERIES II. CALYCIFLORÆ. ORD. XXII.—XXXVI.

Petals and *stamens* perigynous or epigynous; *ovary* superior or inferior.

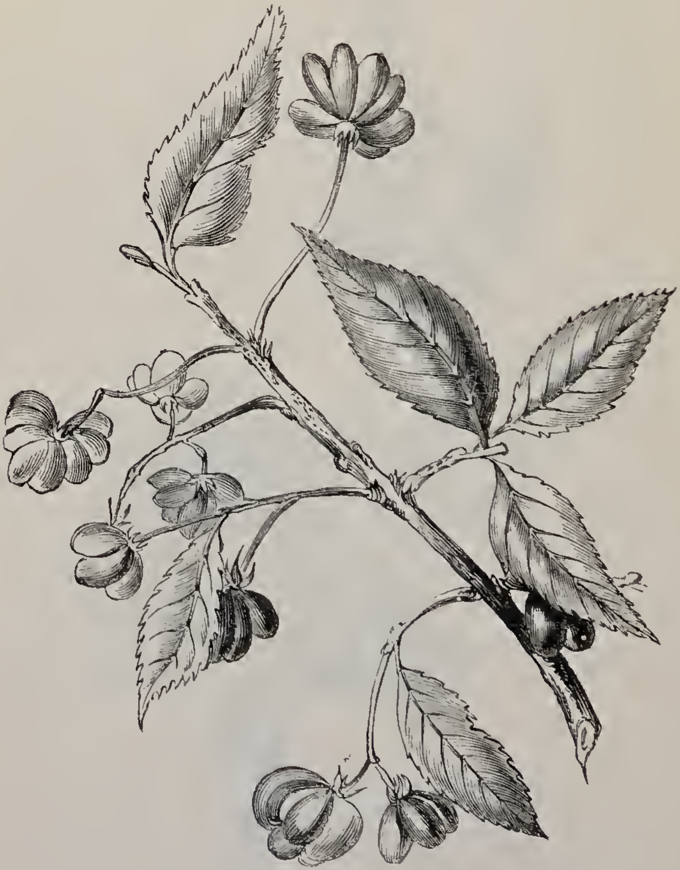
§ *Stamens* perigynous; *ovary* generally superior.

ORD. XXII. CELASTRÍNEÆ.—THE SPINDLE-TREE FAMILY.



FLOWER OF EUÓNYMUS EUROPÆUS (*Common Spindle-tree*).

A rather large and widely distributed Order of trees and shrubs, containing only one British species, and not many others of much interest. They have simple *leaves*, and small cymose *flowers ; sepals* 4—5, united, imbricate ; *petals* and *stamens* both equal in number to the sepals ; *ovary* sunk in the disk, 2—5-chambered ; *ovules* 2 in each chamber ; *seeds* usually wrapped in a fleshy aril.



FRUIT OF EUÓNYMUS EUROPÆUS (*Common Spindle-tree*)

1. EUÓNYMUS (Spindle-tree).—Trees or shrubs with opposite *leaves;* *flowers* in axillary cymes, with a broad 4—5-lobed fleshy *disk;* *fruit* a fleshy 3—5-angled capsule, with 3—5 chambers and valves; *seeds* solitary in each chamber. (Name from the Greek *euónumos*, lucky, in allusion to the poisonous character of the fruit, as fairies are called "good people" from fear.)

1. *E. europæus* (Common Spindle-tree, Prickwood). —A shrub well marked by its smooth, green, angular *branches;* glossy, ovate-lanceolate, minutely serrated *leaves;* loose clusters of small greenish, usually tetramerous, *flowers;* and, above all, by its deeply-lobed *capsules*, which, when ripe, are rose-coloured, and split so as to disclose the *seeds* covered by a scarlet aril, which Tennyson describes as—

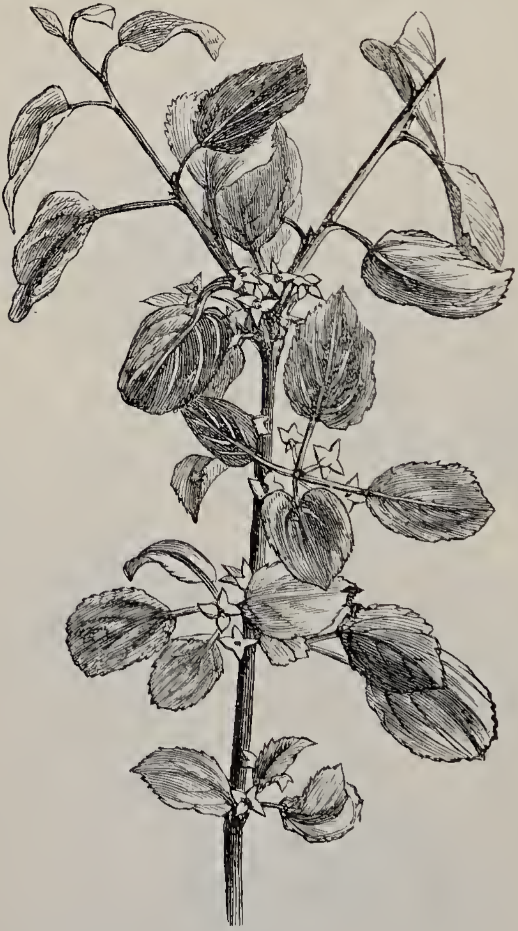
> "The fruit that in our autumn woodlands looks a flower."

The wood was formerly used for skewers, spindles, and charcoal.—Fl. May, June.

ORD. XXIII. RHÁMNEÆ.—THE BUCKTHORN FAMILY.

Trees or shrubs, with simple *leaves*, minute *stipules*, and small greenish *flowers;* *sepals* 4 or 5, united, valvate; *petals* 4 or 5, inserted in the throat of the calyx, or absent; *stamens* 4 or 5, opposite the petals; *ovary* superior, or half superior, 2—4-chambered, surrounded by a fleshy *disk;* *fruit* fleshy and indehiscent, or dry and separating into three divisions; *seeds* one in each chamber. *Zízyphus Lótus* is reputed to have been the food of the ancient Lotus-eaters, the Lotophagi mentioned by Homer in the *Odyssey*. It is a prickly shrub with numerous purplish berries, of the size of sloes, with mealy pulp of a delicious flavour, and large stones. Other species of this genus produce the jujube, well known in this country as a sweetmeat.

Z. spina-Christi and *Paliúrus aculeátus*, prickly shrubs, common in the East, are severally believed by many



RHÁMNUS CATHÁRTICUS (*Common Buckthorn*).

persons to have formed our Blessed Saviour's crown of thorns. The berries of species of *Rhámnus* are used as dyes, in making sap-green paint, and in medicine, an extract of *R. Purshiánus* being considerably employed under the name *Cascara sagrada*, "sacred bark"; but they are too violent and uncertain in their effects to be used with safety. Two species of this genus are the only British representatives of the Order.

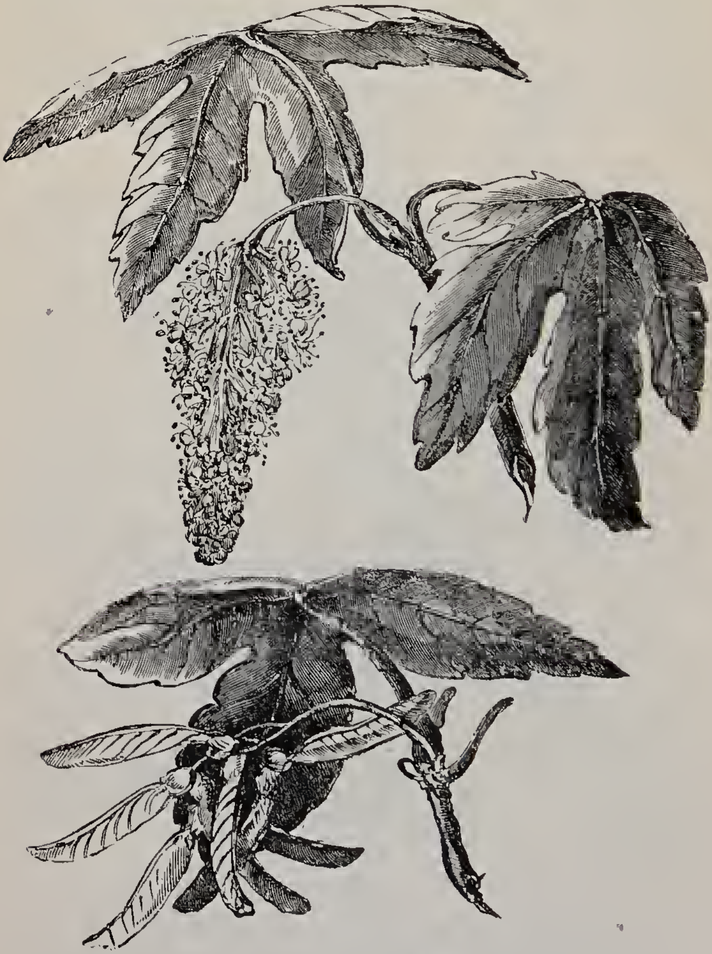
1. RHÁMNUS (Buckthorn).—Shrubs or small trees; *leaves* scattered; *flowers* sometimes unisexual; *calyx* urceolate; *fruit* drupaceous, with 2—4 1-seeded stones. (Name from the Greek *rhamnos*, a branch.)

1. *R. cathárticus* (Common Buckthorn).—A stiff, much-branched shrub, 5—10 feet high; *branches* opposite, terminating in spines; *leaves* ovate serrate; *flowers* in crowded axillary cymes, yellowish-green, tetramerous, diœcious; *style* 4-cleft; *fruit* with 4 stones, black, powerfully cathartic. These, if gathered before they are ripe, yield a yellow dye; when ripe, they form, if mixed with lime-water and gum-arabic, the pigment known as Sap- or Bladder-green.—Woods, chiefly on chalk.—Fl. May—July.

2. *R. Frángula* (Alder Buckthorn, Black or Berry-bearing Alder).—A shrub, 6—10 feet high, with rather slender, smooth, dark, spineless *branches* not opposite one another; obovate, entire, deep green *leaves*; greenish-white *flowers*; *style* simple; *fruit* with 2 stones. Used under the name Dogwood for gunpowder charcoal.—Woods; not uncommon.—Fl. May, June.

ORD. XXIV. ACERÍNEÆ.—THE MAPLE FAMILY.

Strictly speaking, a tribe in the large Order *Sapindáceæ*, to another division of which the Soap-berry, the Horse-Chestnut, and the Litchi belong. The Maple Tribe are trees with opposite, stalked, deciduous *leaves* palmately-veined; racemose, polysymmetric *flowers*, which are often polygamous, the lower



ÁCER PSEÚDO-PLÁTANUS (*Greater Maple or Sycamore*).

ones being usually staminate and the upper perfect; *calyx* divided into 5 parts (occasionally 4—12), imbricate, deciduous; *petals* of the same number, imbricate or absent; *stamens* usually 8, inserted on a ring-shaped *disk* beneath the ovary; *ovary* laterally compressed 2- (rarely 3—4) lobed and chambered; *style* 2-lobed; *fruit* a 2-winged, 2—4-seeded samara. North America is rich in Maples, their vividly tinted leaves giving a great charm to autumn woodlands. Several species, especially *Ácer saccharínum*, abound in sweet sap, from which maple sugar is manufactured; and the timber of some species is valuable. Bird's-eye Maple is a knotty variety of *A. saccharínum:* the white wood of the Sycamore (*A. Pseúdo-plátanus*) is largely used in Scotland, under the misleading name of Plane, in turnery for bread-platters, butter-dishes, and moulds, &c.; and gnarled specimens of the Common Maple (*A. campéstré*) were formerly employed in making the rare and beautiful "mazer" bowls.

1. ÁCER (Maple).—*Leaves* simple, lobed; *sepals* and *petals* 5 each; *carpels* 2, each with a long wing. (Name the Latin *ăcer*, which it is suggested may have been connected with the Keltic *ac*, a point, maple-wood having been used for spears or other pointed instruments.)

1.* *A. Pseúdo-plátanus* (Greater Maple or Sycamore).—A large and handsome tree, introduced into England before the fourteenth century, and now completely naturalised; *leaves* 4—8 in. across, 5-lobed, unequally serrate; *racemes* pendulous; *ovary* hairy; *wings of samara* scimitar-shaped, divergent, each 1½ in. long. The name Sycamore is due to an erroneous identification of this tree with *Fícus Sycomórus*, the Mulberry- or Sycamore-Fig of Palestine.—Woods.—Fl. May, June.

2. *A. campéstré* (Common or Hedge-Maple), a small tree, with very rugged, corky, fissured bark; *leaves*

2—4 in. across, 5-lobed, lobes obtuse ; *racemes* erect ; *wings of samara* oblong, horizontally divergent, each ½ in. long.—Woods and hedges ; common.—Fl. May, June.

The leaves of both species of Maple are commonly spotted with round black patches produced by a parasitic fungus, *Rhytísma acerínum.*

ÁCER CAMPÉSTRÉ (*Common Maple*).

ORD. XXV. LEGUMINÓSÆ.—THE PEA FAMILY.

The second largest Order of Dicotyledons, containing nearly 7,000 species, ranging in size from minute herbs to huge trees, is yet a very natural one. They have scattered and usually stipulate *leaves*, which are seldom simple ; of the 5 more or less united *sepals*, forming the inferior calyx, the odd one is anterior ;

there is only a single *carpel*, which usually forms a 1-chambered *ovary*, ripening to a *legume*, or dry pod dehiscing down both sutures; and the *seeds* are exalbuminous. Though agreeing in these characters the Order as a whole is subdivided into three sub-orders, only one of which, the *Papilionacéæ*, is represented by British species. This sub-order is marked by the additional characters that its *flowers* are monosymmetric; that the *corolla* of 5 *petals* is papilionaceous; and that there are 10 stamens, either monadelphous or diadelphous, 9 being united by their filaments and the posterior one separate. In a few exotic species the legume becomes fleshy and drupaceous; but then the papilionaceous flower remains as a means of identification, whilst in the sub-orders in which the flower is not papilionaceous the fruit remains the characteristic legume. Among British species the chief varieties of form in the pod are those of the Bird's-foot (*Ornîthopus*) and others, where it is imperfectly jointed, and in Medick (*Medicágo*), where it is often spirally twisted, so as to resemble a snail-shell. Many members of the Order display peculiar irritability in their leaves. Almost all the plants of the Order which have compound leaves fold them together in what is called "sleep" at night; but the species of *Mimósa*, particularly *M. púdica* and *M. sensitíva*, which are known as Sensitive plants, close up in a remarkable manner when touched; whilst those of the Telegraph plant (*Hedysárum gýrans*) are in constant motion. The Order is represented in all parts of the world and competes with the *Gramíneæ* and *Palmáceæ* in its great and varied utility to man. The seeds of many species, under the general name of pulse, afford most nutritious food, exceptionally rich in nitrogen, for man and other animals—Peas, Beans, and Lentils, for example; others supply valuable fodder, such as Clover, Vetches, and Lucerne; the Rosewoods are the best known of many excellent timber-trees; Gum Arabic, Gum Tragacanth, and the Wattle Gums of Australia are products of the Order; Wattle-bark, Catechu, and Kino are among the valuable astringent substances used in tanning; Logwood and Indigo are the chief dyes in the Order. Not a few are poisonous, especially in the seed, of which the Laburnum is a familiar example. Others, the seeds of which are eminently nutritious, have properties of an opposite nature residing in other parts of the plant. The roots of the Kidney Bean, for instance, are dangerously narcotic. Many species are used in medicine, such as Tamarinds, Liquorice, and Senna. The excessively poisonous Ordeal Bean of Calabar (*Physostigma*) contains an alkaloid which is of use in ophthalmic surgery, as it contracts the pupil of the eye. The sweet pods of the Carob-tree (*Ceratónia Síliqua*) are known as Locust beans, or St. John's Bread, being supposed by some to have been the food of St. John the Baptist in the wilderness. They are eaten by children; but are chiefly used to fatten cattle. There are about eighty British species in the Order, the species of *Genísta*, Furze, Broom, and Restharrow—about 10 in all—being shrubby or woody, and the rest herbaceous. For convenience of reference the British genera are arranged in three groups, comprising six tribes, as follows:—

Group I.—Leaves without tendrils, of 1—3 *leaflets.*

Tribe 1. *Genísteæ.—Shrubs: leaflets entire: stamens monadelphous.*

1. GENÍSTA.—*Calyx* 2-lipped, the upper lip deeply 2-cleft, the lower with 3 teeth.

2. ÚLEX.—*Calyx* 2-lipped, yellow.

3. CÝTISUS.—*Calyx* 2-lipped, the upper lip with 2 minute teeth, the lower with 3,

Tribe 2. Trifólieæ. Herbs (rarely shrubs): leaflets 3, generally toothed: stamens usually diadelphous.

4. Onónis.—Herbs or shrubs: *calyx* 5-cleft: *stamens* monadelphous.
5. Trigonélla.—*Racemes* short: *pod* longer than calyx, curved, dehiscent.
6. Medicágo.—*Racemes* short: *pod* usually spiral.
7. Melilótus.—*Racemes* long: *pod* short, indehiscent.
8. Trifólium.—*Flowers* capitate: *pod* short, indehiscent.

Group II.—Leaves without tendrils, imparipinnate: leaflets 5, or more.

Tribe 3. Lóteæ.—Herbs: leaflets entire: stamens monadelphous or diadelphous: pod 2-valved, without a longitudinal septum.

9. Anthýllis.—*Calyx* inflated, enclosing the short *pod*: *stamens* monadelphous.
10. Lótus.—*Calyx* not inflated: *stamens* diadelphous: *pod* longer than calyx.

Tribe 4. Astragaléæ.—Herbs: leaflets entire: stamens diadelphous: pod 2-valved, with a longitudinal septum.

11. Astrágalus.—*Keel of corolla* blunt
12. Oxýtropis.—*Keel of corolla* pointed.

Tribe 5. Hedysáreæ.—Herbs: stamens diadelphous: pod indehiscent, jointed.

13. Orníthopus.—*Pod* curved, with many oval, 1-seeded joints.

14. HIPPOCRÉPIS. — *Pod* with many crescent-shaped, 1-seeded joints.

15. ONÓBRYCHIS.—*Pod* straight, 1-seeded.

Group III.—Leaves paripinnate, often ending in a tendril.

Tribe 6. *Víciеæ.—Herbs: leaflets often toothed: stamens diadelphous: pod 2-valved.*

16. VÍCIA.—*Style* thread-like.

17. LÁTHYRUS.—*Style* flattened.

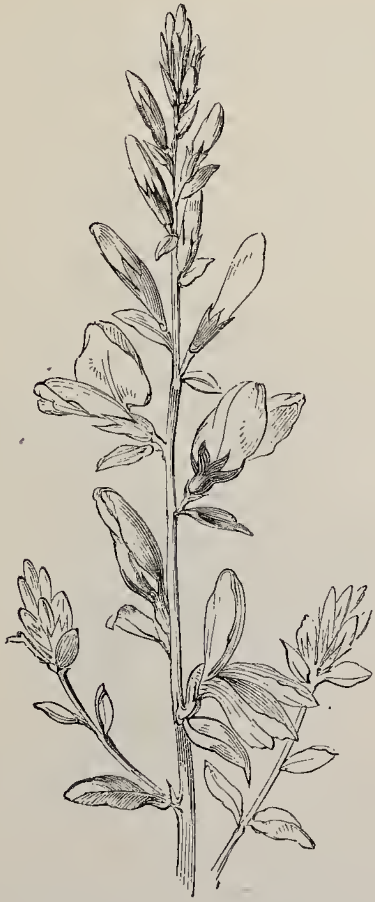
1. GENÍSTA.—Shrubs, sometimes spinous; *leaves* simple, entire; *flowers* in racemes, bracteate, generally yellow; *calyx* shortly 2-lipped, upper lip deeply 2-cleft, lower lip with 3 teeth; *stamens* monadelphous, 5 short with versatile anthers, and 5 alternating with them, long with basifixed anthers. (Name said to be connected with the Keltic *gen*, a shrub.)

1. *G. ánglica* (Petty or Needle Whin).—A low shrub, about a foot high, with tough curved *branches*, armed at intervals with slender, very sharp, recurved spines, the upper branches leafy, without thorns and flowering; *leaves* ovate-lanceolate; *racemes* short; *legumes* smooth, inflated. The yellow flowers (like some others belonging to this Natural Order) turn green in drying.—Heaths; common.—Fl. May, June. Perennial.

2. *G. pilósa* (Hairy Green-weed).—A low shrub with prostrate, furrowed, much-branched, spineless *stems*; obovate *leaves*, silky beneath; small yellow silky *flowers* in short racemes; and downy *legumes*.—Dry heaths in the south; rare.—Fl. May, and again in autumn. Perennial.

3. *G. tinctória* (Dyer's Greenweed, Woad-waxen).—A low shrub, about a foot high, with tough, erect,

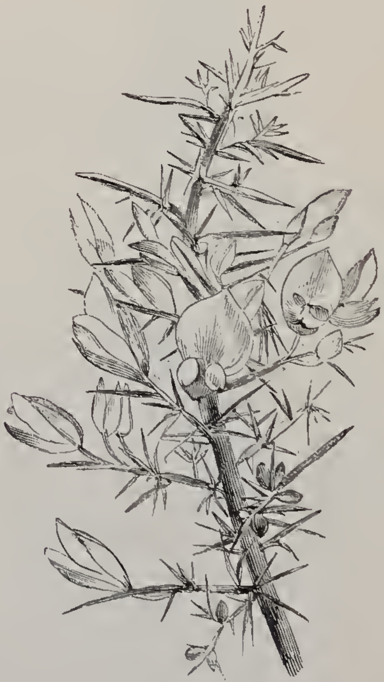
spineless, glabrous *branches ;* bright green, lanceolate, ciliate *leaves ; flowers* yellow, in long racemes, glabrous; and *legumes* smooth. It grows chiefly in pastures on a clay soil, and was formerly used as a yellow dye. This was probably the *Plánta genísta*



GENÍSTA TINCTÓRIA (*Dyer's Greenweed, Woad-waxen*).

that formed the badge of the Plantagenet family.—Fl. July—September. Perennial.

2. Úlex (Furze).—Densely spinous shrubs; *leaves* in the seedling ternate, afterwards spinescent; *flowers* axillary, yellow, with small *bracts*; *calyx* yellow, deeply 2-lipped, upper lip obscurely 2-toothed, lower 3-toothed; *stamens* monadelphous, alternately short with versatile anthers, and long with basifixed ones; *legume* swollen, few-seeded, scarcely longer than the calyx. (Name said to be connected with the Keltic *ec* or *ac*, a prickle.)



ÚLEX EUROPÆUS (*Common Furze*).

1. *U. europæus* (Common Furze, Gorse, or Whin).

—A much-branched, spreading shrub, copiously beset with branched spines, almost leafless; *bracts* ovate, not adhering closely to the calyx; *calyx* shaggy, very obscurely toothed; *wing-petals* longer than the keel; *pod* black, with brown hairs, bursting elastically with a crackling sound, especially in hot weather, scattering the seeds on all sides.—Commons, everywhere. Perhaps no plant is so characteristic of English scenery. It attains maturity in about four years, but in sheltered places grows until it reaches a height of 10 or 12 feet. It will not thrive in hot or in very cold climates, being uncommon even in the Highlands of Scotland.—Fl. February—June, and again August, September. Perennial.

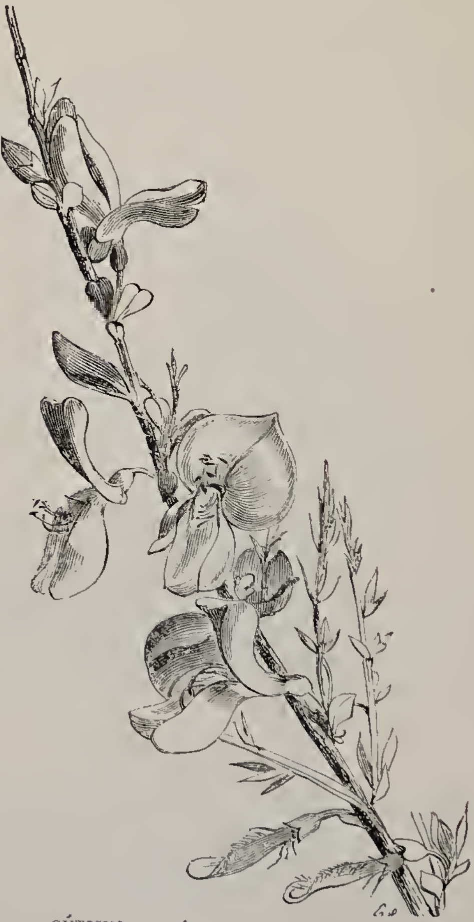
2. *U. Gállii* (Larger Dwarf Furze).—A shrub, 2—5 feet high with ascending *branches* with strong curved spines; *bracts* very minute, adpressed; *flowers* small, orange; *calyx* downy, with diverging teeth; *wing-petals* rather longer than the keel.—Heaths; common. —Fl. August—November. Perennial.

3. *U. nánus* (Lesser Dwarf Furze).—A smaller, more prostrate shrub, with short, straight, weak spines; *bracts* very minute, adpressed; *flowers* small, pale yellow; *calyx* downy, with diverging teeth; *wing-petals* shorter than the keel.—Heaths, chiefly in the south; less common than *U. Gállii.*—Fl. July—September. Perennial.

3. CÝTISUS (Broom).—Shrubs, rarely spinous; *leaves* simple or ternate, with minute *stipules*; *calyx* 2-lipped, the upper lip minutely 2-toothed, the lower 3-toothed; *standard petal* broadly ovate; *stamens* monadelphous: *style* curved or coiled; *pod* flat, many-seeded. (Name Classical.)

1. *C. scopárius* (Common Broom).—The only British species, well distinguished by its numerous, slender, erect, green, angular *branches*, small, scat-

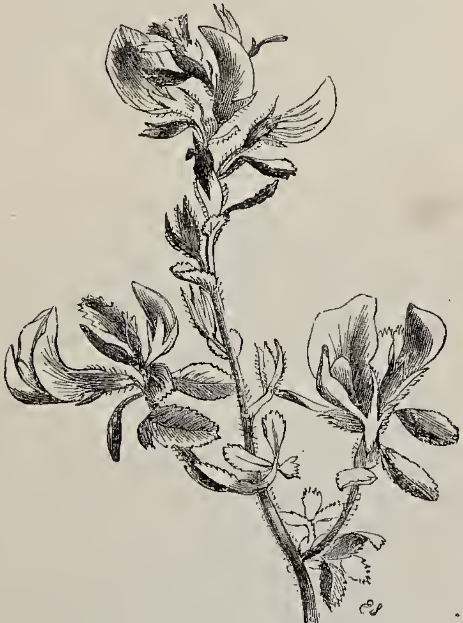
tered, simple or ternate *leaves*, large yellow *flowers*, with spirally-coiled *styles*, and black *pods*, which are hairy at the margin.—Sandy places; common.—Fl. May, June. Perennial.


CY̍TISUS SCOPÁRIUS (*Common Broom*).

* The Laburnum is a member of the same genus.

4. Onónis (Rest-harrow).—Small shrubs, rarely herbaceous, hairy and generally viscid; *leaves* pinnate; *leaflets* 3, toothed; *stipules* adnate to the petiole; *flowers* pink; *calyx* 5-cleft; *standard* broad; *keel* incurved, pointed; *stamens* monadelphous; *style* curved; *pod* not compressed. (Name of Greek origin, connected with *ŏnos*, an ass.)

1. *O. répens* (Creeping Rest-harrow, Wild Liquorice).—A prostrate, shrubby plant with runners, hairy, viscid, most commonly without spines; *leaflets* oblong; *flowers* axillary, solitary, and of a handsome bright pink; *pod* shorter than the calyx. The plant has a powerful odour and derives its name of Rest-harrow from its tough branches.—Dry pastures and



ONÓNIS RÉPENS (*Creeping Rest-harrow.*)

sandy shores; common.—Fl. all the summer. Perennial.

2. *O. spinósa* (Erect Rest-harrow).—A sub-erect species, without runners, with two lines of hairs, less viscid and less strongly scented than the last, usually spinous; *leaflets* oblong; *flowers* differing slightly from those of *O. répens; pod* longer than the calyx.—Waste places; frequent.—Fl. all the summer. Perennial.

3. *O. reclináta* (Small Spreading Rest-harrow) is a small, spreading, herbaceous species, viscid and hairy, with reflexed *pods*, which has only been found in Alderney, Devon, and Galloway.—Fl. June, July. Annual.

5. Trigonélla (Fenugreek).—Herbs, often strongly scented; *leaves* as in *On nis*; *flowers* solitary or in short racemes; *calyx* 5-toothed; *stamens* diadelphous; *pod* compressed, longer than the calyx, many-seeded. (Name, the old Greek name denoting *three-angled*, from the form of the corolla.)

1. *T. purpuráscens* (Bird's-foot Fenugreek).—A small, slender, prostrate, glabrous plant, with small pink and white *flowers*, 1—3 together, and straight, 6—8-seeded *pods*, twice as long as the calyx, dehiscent.—Dry sandy places; not common.—Fl. June—August. Annual or biennial.

The name *Fenugreek* comes from *fœnum græcum*, Greek hay, this plant being used to scent inferior hay.

6. Medicágo (Medick).—Herbs with *leaves* as in the two preceding genera; small yellow or violet *flowers*, in short racemes; *calyx* 5-toothed; *stamens* diadelphous; *pod* sickle-shaped or spirally coiled, often spiny, generally indehiscent. (Name of Greek

origin, denoting that the plant so named was introduced from Media.)

* *Perennial: sometimes monadelphous: pods dehiscent, without spines.*

1.* *M. sativa* (Lucerne).—An erect species, 1—2 feet high; *stem* hollow; *leaflets* oblong, toothed, apiculate; *flowers* large, in short, close racemes, usually purple; *pod* in 2—3 loose spiral coils, downy. A cultivated plant, said to have been introduced into Greece from Media by Darius.—Fl. June, July. Perennial.

2. *M. sylvéstris* (Wood Medick).—An allied form, with more solid *stem*; large yellow or dark green *flowers*; and compressed *pods*, semicircular or ring-shaped, downy.—Sandy places in Norfolk and Suffolk.—Fl. June, July. Perennial.

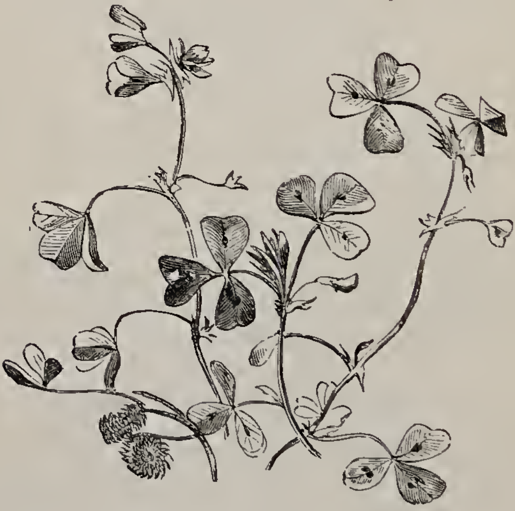
3. *M. falcáta* (Sickle Medick).—An allied but prostrate form, with large yellow *flowers* and a falcate or sickle-shaped pod.—Found in similar situations.—Fl. June, July. Perennial.

** *Annual or biennial: pods indehiscent, often spiny.*

4. *M. lupulína* (Black Medick, or Nonsuch).—A prostrate, spreading herb; *leaflets* inversely egg-shaped, finely toothed; *flowers* small, yellow, subsessile, in dense oblong heads; *pods* black, kidney-shaped, 1-seeded. Resembling some of the smaller Clovers, from which it may be distinguished by its pods not being enclosed within the calyx.—In pastures; common.—Fl. June—August. Annual or biennial.

5. *M. denticuláta* (Toothed Medick).—A glabrous species; *leaflets* inversely heart-shaped; *stipules* jagged; *flowers* yellow, solitary, or 2—5 together; *pods* in 2 or 3 loose spiral coils, with a double row of spines.—Sandy places; rare.—Fl. April—August. Annual.

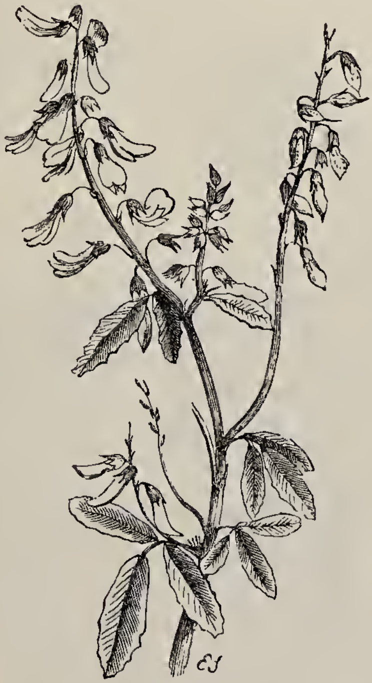
6. *M. arábica* (Spotted Medick).—A glabrous species; *leaflets* inversely heart-shaped, with a purple heart-shaped spot in the centre; *stipules* toothed; *flowers* yellow, solitary, or 2—4 together; *pods* in 2—6 compact spiral coils, with a double row of spines, forming a prickly ball.—On gravelly soil in the South and West of England; not uncommon. In Cornwall, under the name of *Spotted Clover*, this plant is considered very injurious to pasturage.—Fl. May—September. Annual.



MEDICÁGO ARÁBICA (*Spotted Medick*).

7. *M. mínima* (Little Bur-Medick).—A downy prostrate species; *leaflets* inversely egg-shaped; *stipules* slightly toothed; *flowers* yellow, solitary, or 2—6 together; *pods* in 4 or 5 compact spiral coils, with a double row of spines.—Sandy places; rare.—Fl. May—July. Annual.

7. Melilótus (Melilot).—Tall, annual or biennial, fragrant herbs, with *leaves* as in the preceding genera; small, drooping, yellow or white *flowers* in long racemes; *calyx* 5-toothed; *stamens* diadelphous; *pods* short, straight, indehiscent. (Name of Greek origin, from *meli*, honey, and *lotos*, the plant so called.)

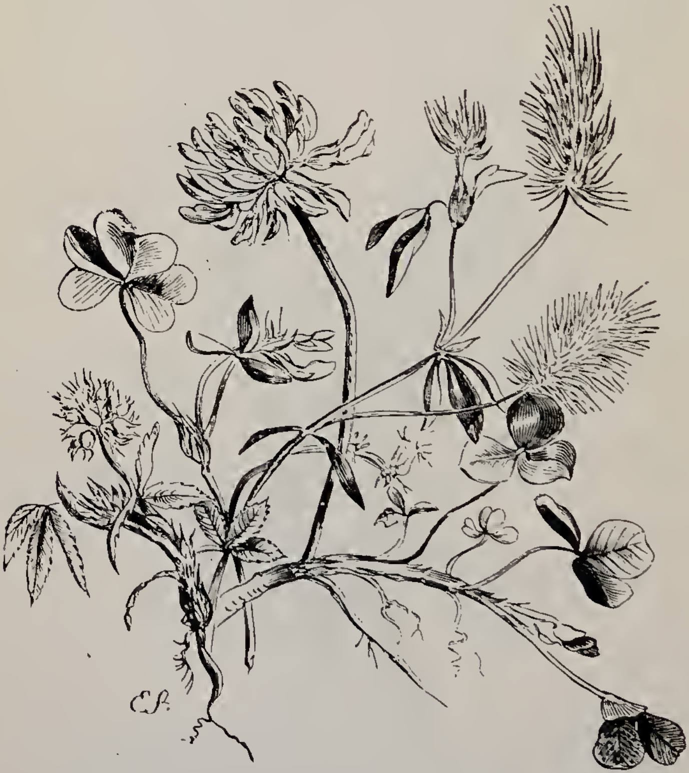


MELILÓTUS OFFICINÁLIS (*Common Yellow Melilot*).

1. *M. officinális* (Common Yellow Melilot).—An erect, branched, slightly woody plant, 2—3 feet high; *leaflets* light green, linear-ovate, toothed; *flowers* small, yellow, in long, erect, 1-sided racemes; *pods* compressed, ovoid, acute, hairy, black when ripe, 1—2-seeded. While drying, this plant smells like

woodruff, or new hay.—Waste places; not uncommon.—Fl. June—August. Annual or biennial.

2.* *M. álba* (White Melilot), differing in having smaller white *flowers* and smooth *pods*, is much less



TRIFÓLIUM STRÍCTUM, SUBTERRÁNEUM, RÉPENS, *and* ARVÉNSÉ.

common and doubtfully native.—Fl. July, August. Biennial.

3.* *M. arvénsis*, a biennial species, with pale yellow or white *flowers* and smooth *pods*, becoming olive-brown when ripe; and

4.* *M. índica*, a small, slender annual with very small pale yellow *flowers* and smooth, globose *pods*, becoming olive-green when ripe, occur in waste places.

8. Trifólium (Clover, Trefoil).—Herbs with ternate *leaves*; *stipules* adnate to the petiole; *flowers* sessile or sub-sessile, in heads or spikes, rarely solitary, red, white, or rarely yellow; *calyx* unequally 5-toothed; *petals* persistent; *stamens* diadelphous; *pod* small, nearly enclosed in the calyx, indehiscent, 1—4-seeded. (Name from the Latin *tri*, three, and *fólium*, a leaf.)

* *Heads few-flowered, axillary: throat of calyx naked.*

1. *T. subterráneum* (Subterranean Clover).—A curious little plant, with prostrate, branched, hairy *stems*; and small axillary heads of white *flowers*, 3—5 together, with numerous 5-toothed *abortive calyces* which cover the *pods*, as the head bends abruptly downwards after flowering, burying itself in the ground.—Dry sandy places; uncommon.—Fl. May, June. Annual.

** *Heads many-flowered, terminal: throat of calyx with a ring of hairs: pod 1-seeded.*

† *Heads ovoid or globose.*

2. *T. praténsé* (Red Clover).—*Leaflets* broad, notched or entire; *stipules* broad, terminating abruptly in a long bristle; *flowers* red, or sometimes white, in terminal, sessile, dense roundish-oblong *heads*; *calyx* hairy, its bristle-like teeth half as long as the corolla.—The common Clover of meadows, where it forms a valuable part of the hay crop.

There are also improved cultivated varieties. The corolla tubes abound in honey, on which account children often call them Honeysuckles. The flowers are very sweetly-scented.—Fl. All the summer. Perennial.

3. *T. médium* (Zigzag Clover).—Not unlike the last, but distinguished by its more slender, erect, zigzag habit; narrower, elliptical, slightly hairy *leaflets*; lanceolate, not abrupt, *stipules*; and loose, stalked, round *heads* of *flowers*.—Dry pastures and bushy places; common. It thrives better than *T. praténsé*, in dry soils. — Fl. June—September. Perennial.

4. *T. ochroleúcon* (Sulphur-coloured Trefoil).—Erect, 6—18 in. high, downy; *lower leaves* on very long stalks; *flowers* cream-coloured, turning brown as they fade, in terminal, stalked, dense *heads*, which are at first globose, afterwards ovate.—Dry pastures in the eastern counties; rare.—Fl. June—August. Perennial.

5. *T. squamósum* (Teazel-headed Trefoil).—*Stem* spreading, usually procumbent; *stipules* awl-shaped, very long; *flowers* small, pink, in terminal, stalked, roundish *heads*: *calyx-teeth* awl-shaped, ciliate, shorter than the corolla, finally becoming enlarged, broad and spreading.—Salt marshes in the South of England.—Fl. June, July. Annual.

†† *Heads cylindric, during or after flowering.*

6.* *T. incarnátum* (Crimson Clover).—Erect, downy, with spreading hairs; *leaflets* obovate; *stipules* ovate, blunt; *flowers* deep crimson, in solitary, terminal, stalked, cylindric *heads* 1—3 in. long; *calyx-teeth* hairy, shorter than the corolla, spreading in the fruit.—A common fodder crop, sometimes escaping.—Fl. June, July. Annual.

7. *T. Molinérii* (Large-headed White Trefoil).—Perhaps the original wild form of the preceding, from which it differs in being shorter, and in having adpressed hairs and white or pink *flowers* in conical heads about 1 in. long.—On the cliffs at the Lizard, Cornwall.—Fl. June, July. Annual.

8.* *T. stellátum* (Starry-headed Trefoil).—A prostrate form, with terminal, stalked, globose heads of small cream-coloured *flowers*, and hairy *calyx-teeth* spreading remarkably in a star-like manner in fruit. —Occurs as a casual on the shingle near Shoreham, Sussex.—Fl. June, July. Annual.

9. *T. arvénsé* (Hare's-foot Trefoil).—Softly hairy, erect, branched; *flowers* small, pale pink, in terminal, stalked, cylindric *heads* about 1 in. long, and almost concealed in the long, very soft, russet hairs of their *calyces*.—A very distinct species; common in sandy places.—Fl. July—September. Annual.

*** *Heads many-flowered, terminal and axillary.*

† *Throat of calyx with a ring of hairs : pod* 1-*seeded.*

10. *T. Boccóni* (Boccone's Trefoil).—A small pubescent erect species, 2—6 in. high, with oblong *stipules* with bristly points, and sessile dense conical *heads*, usually 2 together, of small white *flowers*. —Grows in dry places at the Lizard.—Fl. July. Annual.

11. *T. striátum* (Soft Knotted Trefoil).—A prostrate, ascending, silky species with small rose-coloured *flowers* in sessile, terminal and axillary, ovate downy *heads*; and a ribbed *calyx* swelling after flowering.—Dry places, especially near the sea; frequent.—Fl. June, July. Annual.

12. *T. scábrum* (Rigid Trefoil).—A small downy, prostrate plant, with inconspicuous white *flowers* in sessile, dense, ovoid, terminal and axillary *heads*, which

become prickly from the rigid, spinescent, spreading *calyx-teeth* when in fruit.—Dry places; often growing with the preceding, but less common.—Fl. May—July. Annual.

‡ *Throat of calyx glabrous: pod 2—4-seeded.*

13. *T. glomerátum* (Smooth Round-headed Trefoil).—Very similar to the preceding, but glabrous and with rounder *heads* of purplish *flowers* and more leafy broad *calyx-teeth*, which are spinescent and reflexed in fruit.—Gravelly places near the sea; rare.—Fl. June. Annual.

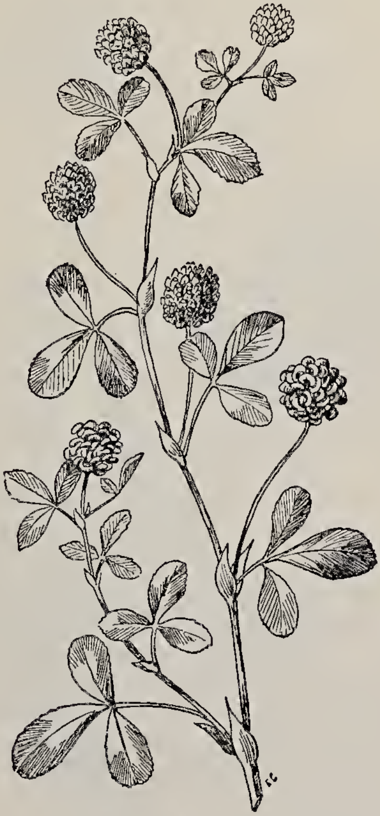
14. *T. suffocátum* (Suffocated Trefoil).—A small, slender, glabrous, prostrate plant, with its *stem* usually buried in sand; small white *flowers* ino void *heads*, which are often confluent; *calyx-teeth* lanceolate, longer than the corolla, recurved but not spiny in fruit.—Sandy sea-shores; rare.—Fl. June, July. Annual.

15. *T. stríctum* (Upright Round-headed Trefoil).—A small, ascending, glabrous species; *leaflets* linear-lanceolate, toothed; *flowers* small, rose-coloured, in stalked globose *heads*; *calyx-teeth* subulate, spreading.—Rocks, Jersey and the Lizard, where it was first found by the Rev. C. A. Johns in 1847; very rare.—Fl. June, July. Annual.

**** *Heads many-flowered, axillary: throat of calyx glabrous: pod 1—6-seeded.*

16.* *T. hýbridum* (Alsike Clover).—A tall, erect, branched, glabrous plant; *petioles* long; *stipules* leafy, ovate-lanceolate; *flowers* white or pale pink, becoming brown, in stalked, globose, drooping heads; *calyx-teeth* nearly equal, subulate, erect.—A cultivated plant, introduced from Alsike, near Upsala, Sweden.—Fl. June—September. Perennial.

17. *T. rĕpens* (White or Dutch Clover).—*Stem* creeping; *leaflets* often with a white band and a purplish spot near the middle; *flowers* stalked, white, sometimes tinged with pink, fragrant, fading to brown and bending downwards, in roundish *heads; pod* 4-seeded.—Abundant in meadows, where it forms excellent pasture. In a variety commonly cultivated in gardens, under the name of Shamrock, nearly the



TRIFÓLIUM PROCÚMBENS (*Hop Trefoil*).

whole of the centre of each leaflet is tinged with dark purple. The real Shamrock is probably this species or any other "3-leaved grass"; but some antiquarians contend that, as Ireland was well-wooded in St. Patrick's time, it was probably a leaf of the Wood-Sorrel (*Óxalis Acetosélla*) that the Saint selected to illustrate the doctrine of the Trinity. On St. Patrick's Day (March 17th) the distinctive characters of the trefoils are scarcely developed.—Fl. all through the summer. Perennial.

18. *T. fragíferum* (Strawberry-headed Trefoil) has the habit of the preceding; but the *flowers* are rose-coloured, and the large globose *heads* of inflated calyces, enclosing the 1—2-seeded *pods* and often tinged with pink, are not unlike the fruit from which the plant is named.—Damp meadows; not very common.—Fl. July, August. Perennial.

19.* *T. resupinátum*, a similar species, but with shorter *peduncles*, smaller *bracts*, and reversed (resupinate) *flowers*, occurs as a casual.—Fl. July. Annual.

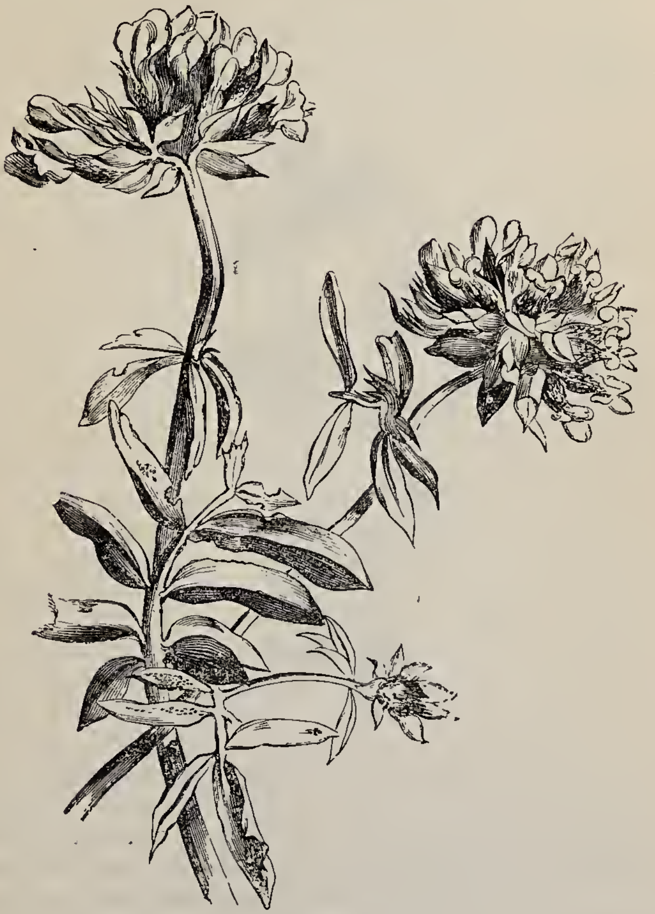
20. *T. procúmbens* (Hop Trefoil).—A small, downy plant with dense oval heads of about 40 yellow *flowers*, resembling *Medicágo lupulína* in habit, but at once distinguished when in fruit by the tawny, hop-like heads of withered flowers, the *standard petals* persisting and arching over the *pods*; *style* shorter than the pod. Dry pastures; abundant.—Fl. June—August. Annual.

21.* *T. agrárium*, a closely-allied form with the *style* as long as the pod and the *heads* larger, occurs as a casual.

22. *T. dúbium* (Lesser Yellow Trefoil), with much smaller *heads* than *T. procúmbens*, 4—20-flowered, turning dark brown, is even more common in dry places.—Fl. June—August. Annual.

23. *T. filifórmé* (Slender Yellow Trefoil).—A small, prostrate, very slender, slightly hairy species, with

very small 2—7-flowered loose heads, is much less common.—Fl. June, July. Annual.

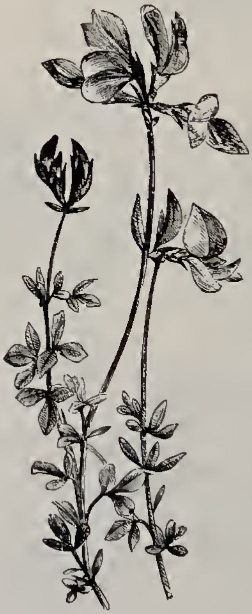


ANTHÝLLIS VULNERÁRIA (*Common Lady's Fingers*).

9. Anthýllis (Kidney-Vetch).—Herbs or shrubs; *leaves* imparipinnate; *flowers* in capitate cymes; *calyx* inflated; *petals* with long claws; *stamens* monadelph-

ous; *pod* enclosed in the calyx, 1-seeded. (Name of Greek origin.)

1. *A. Vulneraria* (Kidney-Vetch, Lady's Fingers).—The only British species, a handsome, herbaceous, silky plant, with pinnate *leaves* (the terminal leaflet largest), and yellow *flowers*, with pale inflated *calyces.*



LÓTUS CORNICULÁTUS (*Common Bird's-foot Trefoil*).

The dense, many-flowered *heads* of flowers grow two together at the end of each stalk, like the two lobes of a kidney. There are white and red-flowered varieties.—Dry pastures.—Fl. June—August. Perennial.

10. LÓTUS (Bird's-foot Trefoil).—Herbs or undershrubs; *leaves* of 4 or 5 leaflets; *stipules* minute or

absent; *flowers* in long-stalked, capitate or umbellate, cymes; *calyx* not inflated; *stamens* diadelphous; *pod* longer than the calyx, straight, cylindric, many-seeded. (Name of Greek origin.)

1. *L. corniculátus* (Common Bird's-foot Trefoil).—A pretty familiar flower; *stems* prostrate, ascending; *leaves* usually almost glabrous, or with few or many long soft hairs; *flowers* in umbellate cymes, 5—10 together on long *peduncles* and very short *pedicels*, generally deep orange in the bud, and varying in the same umbel from bright yellow to deep brownish-orange; *calyx-teeth* erect in bud, two upper ones converging; *pods* about an inch long, diverging like the toes of a bird.—Pastures; abundant—Fl. June—September. Perennial.

2. *L. ténuis* (Slender Bird's-foot Trefoil), differing in its more slender, thread-like *stem*, narrower, pointed *leaflets*, and fewer and smaller *flowers*, grows in damp places, and is less common.

3. *L. uliginósus* (Greater Bird's-foot Trefoil).—Generally hairy, but sometimes glabrous, 1—3 feet high; *stems* tubular, weak, and usually supported by surrounding plants; *leaflets* obovate; *peduncles* very long; *flowers* deep yellow, 5—12 together; *calyx-teeth*, while in bud, spreading like a star, two upper ones diverging.—Damp places; common.—Fl. July, August. Perennial.

4. *L. angustíssimus* (Least Bird's-foot Trefoil).—A much smaller plant than *L. corniculátus*, prostrate, hairy, with shorter *peduncles*; *flowers* solitary or 2 together, small, yellow, fading green; *pods* an inch or more in length.—South of England, near the sea; very rare.—Fl. July, August. Annual.

5. *L. híspidus* (Hispid Bird's-foot Trefoil), a closely-allied, more silky form, with *flowers* 2—4 together, not fading green, and *pods* not more than $\frac{3}{4}$ in. long, occurs very rarely, near the sea, in Dorset, Devon, and Cornwall.—Fl. July, August. Annual.

11. ASTRÁGALUS (Milk-vetch).—Herbs with stipulate, imparipinnate *leaves ; flowers* in axillary racemes or spikes; *calyx* with 5 sub-equal teeth; *corolla* with blunt keel; *stamens* diadelphous; *pod* with a longitudinal septum, 2-valved. (Name from the Greek *astrágalos*, a pastern bone, but not applicable to this genus.)

1. *A. alpínus* (Alpine Milk-vetch). — A slender, prostrate, hairy plant, with 10—12 pairs of oblong *leaflets ;* free *stipules ;* shortly-stalked, close racemes of a few drooping *flowers*, which are white or pale blue, tipped with purple; and pendulous *pods* covered with black hairs.—Occurs very rarely on Scottish mountains.—Fl. July. Perennial.

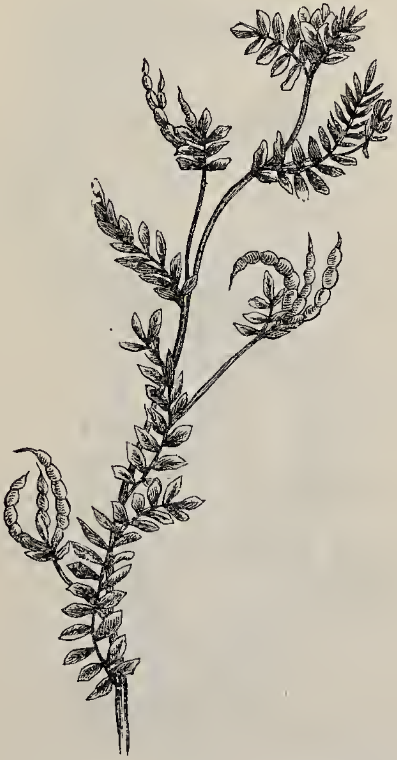
2. *A. dánicus* (Purple Milk-vetch).—A similar species, with 8—10 pairs of *leaflets;* connate *stipules*, opposite the leaf; *peduncles* longer than the leaves; *flowers* many, ascending, in ovoid heads, purple; and erect *pods*.—Dry soil, in the eastern counties; rare.—Fl. June, July. Perennial.

3. *A. glycyphýllos* (Sweet Milk-vetch).—A much larger species; *stems* 2—3 feet long, stout, prostrate, zigzag, glabrous; *leaflets* in 5—6 pairs; *stipules* free; *flowers* in short-stalked, dense, short racemes, creamy-yellow; *pods* erect, curved, smooth.—Thickets on a chalky or gravelly soil; uncommon.—Fl. June, July. Perennial.

12. OXÝTROPIS.—Herbs, distinguished from *Astrágalus* mainly by having a mucronate point to the *keel* of the *corolla*. (Name from the Greek *oxús*, sharp, *trópis*, a keel.)

1. *O. uralénsis* (Hairy Mountain Oxytropis).—A low plant; *leaves* radical; leaflets in about 12 pairs; *peduncles* longer than the leaves, erect, silky, 6—10-flowered; *flowers* bright purple; *pods* erect, silky.—Dry mountain pastures in Scotland; rare.—Fl. June, July. Perennial.

2. *O. campéstris* (Yellowish Mountain Oxytropis).—A larger, hairy, but less silky species, with *peduncles* scarcely longer than the leaves, and yellowish *flowers* tinged with purple. Occurs only in the Clova mountains.—Fl. June, July. Perennial.

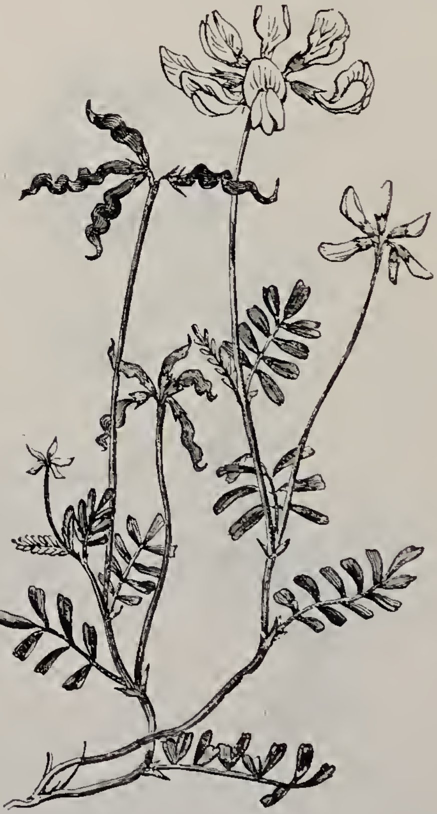


ORNÍTHOPUS PERPUSÍLLUS (*Common Bird's-foot*).

13. ORNÍTHOPUS (Bird's-foot).—Slender, hairy herbs; *leaves* imparipinnate; *flowers* few, minute, in long-stalked *heads*; *stamens* diadelphous; *pods* curved, indehiscent, with many oval, 1-seeded joints. (Name

from the Greek *poús*, a foot, *ornı́thos*, of a bird, from the shape of the fruits.)

1. *O. perpusíllus* (Common Bird's-foot).—A pretty little plant, with spreading, prostrate, slender *stems;* downy *leaves* of 13—25 leaflets; exceedingly small cream-coloured *flowers*, veined with crimson, with a leaf below each head; and curved 7—9-jointed *pods*,



HIPPOCRÉPIS COMÓSA (*Tufted Horseshoe-vetch*).

ending in a claw-like beak.—Sandy heaths; frequent. —Fl. May—August. Annual.

2. *O. ebracteátus* (Sand Joint-vetch). — A very

ONÓBRYCHIS VICIÆFÓLIA (*Common Sainfoin*).

similar plant, nearly glabrous, glaucous, with larger, yellower *flowers;* no leaf below the head of flowers; and 10—14-jointed, less constricted *pods*,—Occurs in the Scilly and Channel Islands.—Fl. June—August. Annual.

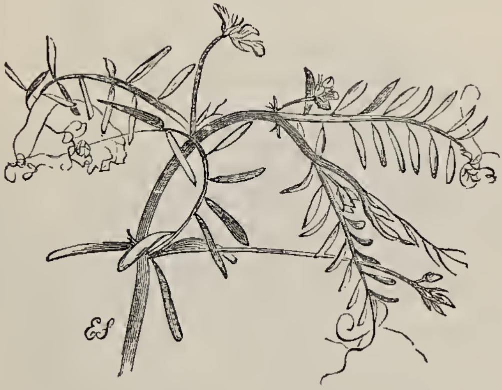
14. Hippocrépis (Horseshoe-vetch). — Low-growing, glabrous herbs; *leaves* imparipinnate; *leaflets* many; *flowers* yellow; *petals* long-clawed; *keel* incurved, pointed; *stamens* diadelphous; *pod* flat, breaking up into 3—6 1-seeded horseshoe-shaped joints. (Name from the Greek *hippos*, a horse, *krépis*, a shoe.)

1. *H. comósa* (Tufted Horseshoe-vetch).—The only British species, a nearly prostrate plant, with long, much-branched *stems*, woody at the base; *leaflets* 7—17; and umbellate *heads* of 6—10 yellow *flowers*. It might be mistaken for *Lótus corniculátus;* but the pinnate leaves and pods resembling a series of horse-shoes, united by their extremities, serve to distinguish it.—Chalky banks in the South of England. —Fl. May—August. Perennial.

15. Onóbrychis (Sainfoin).—Herbs; *leaves* imparipinnate; *stipules* membranous; *flowers* in axillary spikes or racemes; *stamens* diadelphous; *pod* compressed, indehiscent, straight, 1-seeded. (Name from the Greek *ŏnos*, an ass, *brucho*, I bray.)

1. *O. viciæfólia* (Common Sainfoin, Cock's-head).—The only British species, a handsome plant; pubescent with adpressed hairs; *stems* 1—2 feet long, ascending, stout; *leaflets* 17—25, oblong, apiculate; *flowers* in ovoid, compact racemes, rosy-red, with darker veins; *pod* semicircular, toothed along its lower (curved) margin.—Chalky and limestone hills, perhaps indigenous in the South-east of England; but often cultivated as fodder.—Fl. June—August. Perennial.

16. VÍCIA (Vetch.)—Herbs, generally climbing by the *tendrils* which terminate their paripinnate leaves; *leaflets* generally many; *flowers* in axillary racemes; *stamens* diadelphous; *style* thread-like, with a small ring of down near the extremity, or a tuft on the under side; *pod* compressed, 2-valved. (Name, the classical Latin name, originally derived, according to Théis, from the Keltic *gwig*, German *wicken*, Greek *bikion*, French *vesce.*)



VÍCIA HIRSÚTA (*Hairy Tare*).

* *Annuals : leaflets few : flowers few : style with a ring of down.* (Tares.)

1. *V. hirsúta* (Hairy Tare).—A slender, much-branched, hairy plant, forming tangled masses of stems and leaves; *leaflets* 12—16; *flowers* 1—6 together, minute, pale blue; *pods* sessile, hairy, 2-seeded.—Fields and hedges; very common. This, though a mischievous weed, is not the Tare of Holy Scripture, which is supposed to be the Darnel (*Lólium temuléntum*).—Fl. May—August. Annual.

2. *V. gemélla* (Smooth Tare).—More slender, less branched, almost glabrous; *leaflets* 6—12; *flowers* 1—2 together, minute, pale blue; *pods* shortly stalked, glabrous, 3—5-seeded.—In similar situations with the last, but less common.—Fl. May—August. Annual.

3. *V. grácilis* (Slender Tare), a closely-allied form, with 6—8 *leaflets*; *flowers* twice as large, 1—4 together and *pods* longer, 5—8-seeded, occurs in the South of England.—Fl. May—August. Annual.

** *Perennials: leaflets many: flowers very many: style with a ring of hairs.*

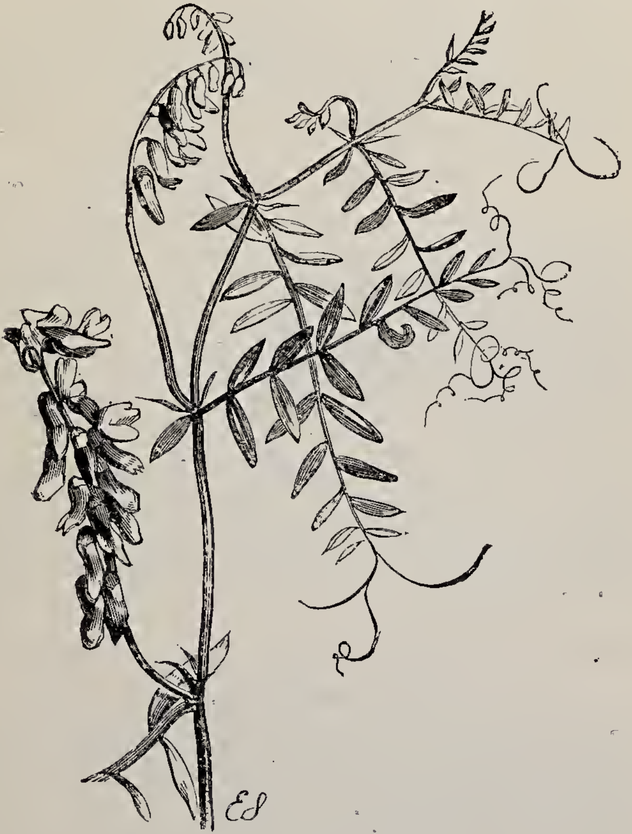
4. *V. Crácca* (Tufted Vetch).—*Leaflets* about 20, narrow, pointed, silky, with branched tendrils; *stipules* half-arrow-shaped, entire; *flowers* crowded in 1-sided, 10—30-flowered racemes, blue and purple. —Bushy places; very common. One of the most ornamental of British plants, adorning the tops of the hedges with its bright flowers.—Fl. June—August. Perennial.

5. *V. Órobus* (Bitter Vetch).—A branched, herbaceous plant, with many prostrate *stems; leaflets* 14—20, oblong, acute, without tendrils; *stipules* half-arrow-shaped, slightly toothed; *flowers* in loose, 1-sided, 6—20-flowered racemes, purplish-white.—Rocky woods, mostly in the north.—Fl. May—September. Perennial.

6. *V. sylvática* (Wood Vetch).—A large and beautiful species, with a long *stem*, 3—6 feet high, climbing by means of its branched tendrils; *leaflets* about 16, elliptical, abrupt, with a short point; *stipules* crescent-shaped, deeply toothed at the base; *flowers* in loose, 1-sided, 6—18-flowered racemes, cream-coloured, with bluish veins.—Mountainous woods; not common.—Fl. June—August. Perennial.

*** *Leaflets many : flowers few : style tufted below stigma on one side.*

7. *V. sépium* (Bush Vetch).—*Leaflets* 12—16, ovate, obtuse, decreasing in size towards the apex of the leaf ; *flowers* in nearly sessile axillary clusters of 4—6, bluish purple ; *pods* smooth.—Woods and hedges, very common.—Fl. May—August. Perennial.



VÍCIA CRÁCCA (*Tufted Vetch*).

8. *V. lútea* (Rough-podded Yellow Vetch).—About 2 feet long, prostrate; *leaflets* 10—14; *flowers* solitary, sessile, rather large, pale yellow; *pods* hairy.—Sea-coast; rare.—Fl. June—August. Perennial.

9.* *V. lævigáta* (Smooth-podded Vetch), a smaller form, which is glabrous, and has pale blue or whitish *flowers*, has been found on the beach at Weymouth.

10.* *V. hybrida*, differing from *V. lútea* in having reddish-yellow *flowers* with a hairy *standard petal*, is recorded from Glastonbury Tor and from Swan Pool, near Lincoln.

11.* *V. satíva* (Common Vetch).—*Stem* stout, about 2 feet high; *leaflets* 10—14, oblong, mucronate, the lower ones often obcordate; *stipules* half-arrow-shaped, toothed at the base, often with a dark blotch; *flowers* large, in pairs, blue and purple or red; *pods* ascending, parallel to the stem, 2—3 in. long, linear, silky.—Fields; common as an escape, being extensively cultivated as fodder for cattle.—Fl. April—June. Annual.

12. *V. angustifólia* (Narrow-leaved Vetch).—A slender form, closely allied to the preceding, but with very narrow *leaflets*, red *flowers*, and spreading *pods*. Occurs truly wild.—Dry places; common.—Fl. May, June. Annual.

**** *Leaflets few: flowers few: style tufted below stigma on one side.*

13. *V. lathyröides* (Spring Vetch).—Nearly allied to the last, but very much smaller, prostrate, and rarely exceeding 6 in. in length; *leaflets* 2—6; *stipules* entire, not marked with a dark spot; *flowers* solitary, sessile, small, purple; *pods* glabrous.—Dry places; not common.—Fl. April—June. Annual.

14. *V. bithýnica*, 1—2 feet long, trailing and smooth, with 4—8 *leaflets*, and solitary (rarely 2—3 together), stalked, purple *flowers*, with paler wing-

petals, hairy *calyx*, and long, hairy *pods*, occurs rarely in bushy, gravelly places near the sea.—Fl. May—August. Perennial.

17. LÁTHYRUS (Vetchling).—Herbs, closely allied to *Vícia*, but with fewer *leaflets*, broader *petals*, and a flattened, longitudinally bearded *style*. (Name of Greek origin.)

* *Annuals: no true leaflets: flowers solitary.*

1.—*L. Áphaca* (Yellow Vetchling).—A pretty trailing glabrous plant, remarkable for being entirely destitute of *leaflets*, the place of which is supplied by a pair of very large ovate-hastate *stipules* at the base of each tendril; *flowers* yellow.—Sandy and gravelly fields in the south; rare.—Fl. May—August. Annual.

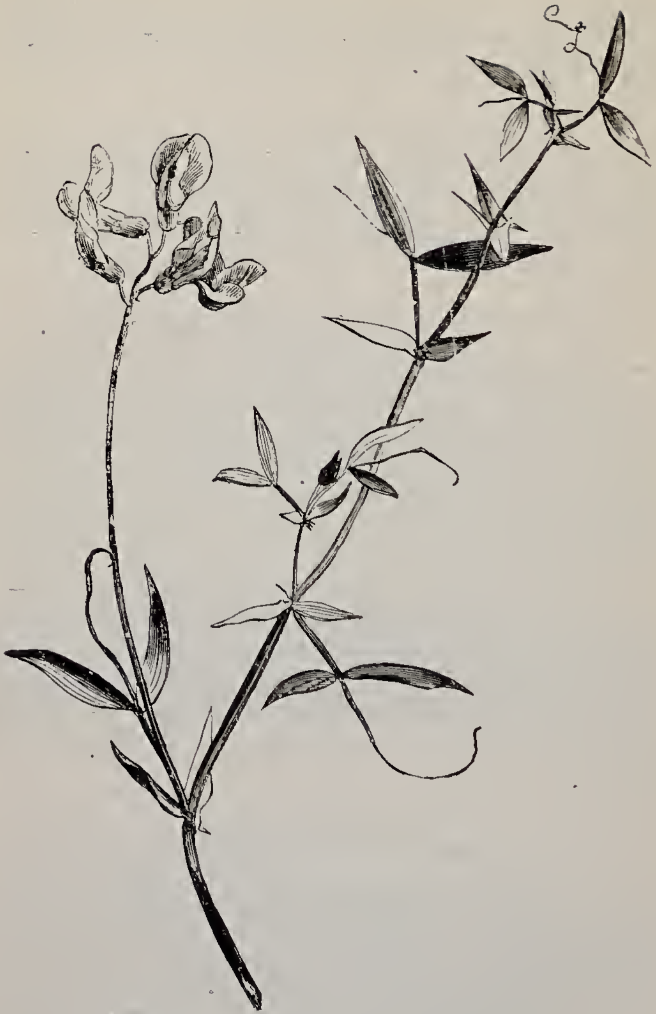
2. *L. Nissólia* (Crimson or Grass Vetchling).—A beautiful and well-marked species, with upright slender *stems*, 1—3 feet high; *leaves* reduced to grass-like linear parallel-veined phyllodes, 3—6 in. long, without tendrils; *flowers* small, deep crimson.—Grassy places in the south; not common.—Fl. May—July. Annual.

** *Leaflets 2; with tendrils: flowers rarely solitary.*

3. *L. hirsútus* (Rough-podded Vetchling), with its *flowers* pale blue, with a crimson standard, in pairs, and hairy *pods*, occurs, very rarely, in Essex and Surrey.—Fl. June, July. Annual.

4.* *L. sphæricus*, with solitary flowers, has been found in Hertfordshire.

5. *L. praténsis* (Meadow Vetchling).—A climbing plant, 2—3 feet long, with angular *stem*; lanceolate *leaflets*, large, arrow-shaped *stipules*; short *tendrils*;



LÁTHYRUS PRATÉNSIS (*Meadow Vetchling*).

long *peduncles; flowers* 3—12 together, pedicellate, showy, bright yellow, all turning one way.—Hedges and meadows; very common.—Fl. June—September. Perennial.

6.* *L. latifólius* (Everlasting Pea), with broad oval *leaflets* and pink *flowers*, more than an inch across, occurs only as an escape from gardens.

7. *L. tuberósus* (Peas Earth-nut), with edible tuberculate *roots;* angled *stem;* ovate *leaflets;* large half-arrow-shaped *stipules;* and long *peduncles* bearing 2 to 5 crimson *flowers*, ¾ in. across, occurs rarely in Essex, where it may have been introduced by the Dutch in the sixteenth century.—Fl. June—August. Perennial.

8. *L. sylvéstris* (Narrow-leaved Everlasting Pea).—A clambering plant, glabrous and glaucous; *stems* winged, 2—6 feet; *leaflets* sword-shaped; *flowers* ¾ in. across, with rose-coloured standard and greenish-yellow wings tinged with purple, not so handsome as those of the garden species.—Rocky thickets; not uncommon.—Fl. June—September. Perennial.

*** *Perennials: leaflets* 4—10*: tendrils short: flowers* 2—10 *together.*

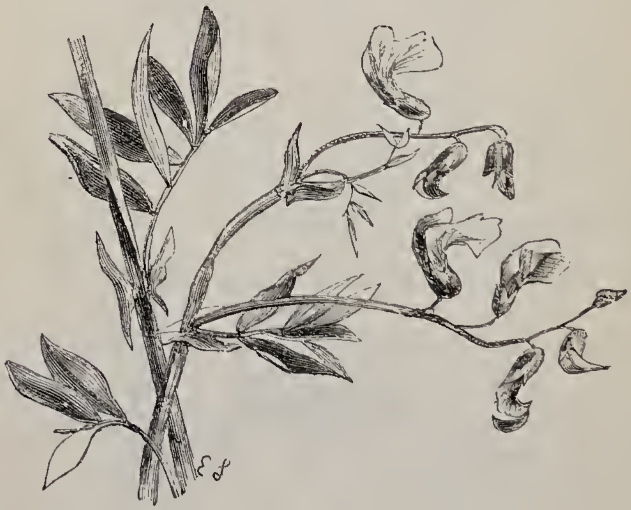
9. *L. palústris* (Blue Marsh Vetchling).—A climbing plant, smaller than the last; *stem* winged; *leaflets* 4—8, very narrow, acute; *flowers* bluish-purple, 2—6 together.—Boggy meadows; rare.—Fl. June—August. Perennial.

10. *L. marítimus* (Seaside Everlasting Pea).—*Stem* prostrate, glabrous, glaucous, angled, not winged; *leaflets* 6—10, egg-shaped; *peduncles* shorter than the leaves, 5—10-flowered; *flowers* purple, variegated with crimson and fading to blue.—Pebbly sea-shores; rare.—Fl. June—August. Perennial.

**** *Perennials: leaflets* 4—12*; without tendrils: flowers* 2—8 *together.* (Bitter Vetches.)

11. *L. montánus* (Tuberous Bitter Vetch).—*Root*

tuberous; *stem* simple, erect, winged; *leaflets* 4—8, oblong, glaucous beneath; *stipules* half-arrow-shaped; *flowers* axillary, purple, variegated with purple, fading to green or blue.—Woods; common. A pretty spring Vetch, growing in similar situations with the Wood Anemone, but appearing somewhat later. It may be at once distinguished by being destitute of tendrils, the place of which is supplied by a soft, bristle-like point. The tubers were eaten in the Scottish Highlands, under the name of *Cormeille*, a very small quantity being said to allay hunger.—Fl. May—August. Perennial.



LÁTHYRUS MONTÁNUS (*Tuberous Bitter Vetch*).

12. *L. níger* (Black Bitter Vetch), distinguished by its branched, angled, but not winged *stem*, and its very narrow *stipules*, occurs rarely in rocky woods in Scotland. It turns black when dried.—Fl. June—August. Perennial.

Ord. XXVI. Rosáceæ.—The Rose Family.

A large and important Order occurring in all parts of the world, and comprising about a thousand species of trees, shrubs, and herbs. They mostly agree in having scattered, stipulate *leaves*; polysymmetric and generally pentamerous *flowers*; *sepals* united, usually 5, the odd one being posterior, occasionally 4, 8, or 10; *petals* 5, perigynous; and *stamens* indefinite. In the number of the *carpels*, their cohesion, and still more their adhesion, and in the forms of fruit resulting from their fertilisation, the members of the Order present great diversity; so that, natural as is the Order as a whole, it is subdivided, as naturally, into seven tribes. The *Prúneæ* are trees and shrubs of the North Temperate Zone, the bark of which often exudes a somewhat insoluble gum; the leaves are simple and, with the seeds, generally yield a considerable quantity of the deadly poison, prussic or hydrocyanic acid; and the fruit is a drupe or stone-fruit, consisting, that is, of one carpel with a skin or epicarp, flesh or mesocarp, stone or endocarp, and containing one kernel or seed. Plums, Cherries, Apricots, Almonds, Peaches, and Nectarines belong to this tribe, as do also the common Laurel, or Cherry-Laurel, as it is best to call it, and the Portugal Laurel. Our cultivated Plums are varieties of *Prúnus doméstica*, the fruit of which has a waxy bloom. Cherries are the fruit of various species of a sub-genus *Cérasus*, said to be named from a city of Pontus, whence the Roman general Lucullus introduced a superior kind, B.C. 67. They have a polished epicarp, as have also the evergreen Cherry-Laurel (*P. Lauro-cérasus*) and Portugal Laurel (*P. lusitánica*). The crushed leaves of the Cherry-Laurel give off a vapour containing prussic acid, and are therefore used by entomologists for killing insects. *P. Armeníaca*, with woolly epicarp and smooth stone, is the Apricot; *Amýgdalus pérsica*, with a wrinkled stone and a woolly epicarp, the Peach, of which the Nectarine is a smooth variety; and *A. commúnis*, with woolly skin, stringy flesh, and a punctured surface to the stone, the Almond. This species is wild from Afghanistan to the Barbary States, and is extensively cultivated in the South of Europe. There are two varieties, one yielding the sweet, the other the bitter Almond. Jordan Almonds, which are considered the best sweet almonds, are brought from Malaga; bitter almonds from Mogador. Many fatal cases are recorded of poisoning by the Oil of Bitter Almonds. The *Spíreæ* are herbs or shrubs, the fruit of which consists of a ring of follicles. Several species of *Spiræ̂a* are ornamental garden plants. The *Rúbeæ* are mostly shrubs, and their fruits, which include the well-known Raspberry and Blackberry, are etærios of drupels. The shoots of the brambles are astringent. The *Potentílleæ*, which include the Strawberry (*Fragária*), are mostly herbs, and their fruits are etærios of achenes, the 1-seeded carpels being dry and indehiscent, though borne in the Strawberry on a fleshy outgrowth from the receptacle. Some members of this tribe are astringent and tonic. The *Poteriéæ* are herbs, often without petals, and sometimes wind-pollinated, which have their 1—3 achenes enclosed within the calyx-tube. The *Róseæ* are shrubs with a characteristic form of etærio of achenes, the numerous carpels being enclosed in a fleshy calyx-tube. Rose-water and Attar of Roses are made from the petals of *Rósa cèntifólia* and *R. damascéna*, 100,000 Roses, the produce of 10,000 bushes, being said to yield only nine drams of Attar. This costly perfume is largely adulterated with "Oil of Geranium," the produce of a fragrant grass. A conserve used in medicine is prepared from the pulp of the fruit of the Rose, or "hip" as it is called. Lastly, the *Pómeæ* are trees or shrubs with the characteristic fruit known as a pome, in which the 1—5 horny or stony carpels are imbedded in a fleshy adherent calyx-tube, comprising the Apple, Pear, Quince, Medlar, Rowan, and Hawthorn. All the cultivated varieties of Apple are derived from the wild Crab, *Pýrus Málus*, and the Pears from a thorny tree, with a hard astringent fruit, *Pýrus commúnis.* The wood of the Pear is very close-grained and is used in making T-squares. The fruit of the Rowan, and some other species, yields malic acid, and the leaves as much prussic acid as those of the Cherry-Laurel.

Tribe 1. *Prúneæ.—Leaves simple : calyx deciduous : fruit a drupe.*

1. PRÚNUS.—*Stone* smooth.

Tribe 2. *Spíreæ.—Calyx persistent : carpels* 5 *or more : fruit an etærio of follicles.*

2. SPIRǼA.—*Sepals* 4—5 ; *carpels* 5—12.

Tribe 3. *Rúbeæ.—Calyx persistent : carpels many : fruit an etærio of drupels.*

3. RÚBUS.—*Receptacle* convex, spongy ; *ovules* 2 in each carpel.

Tribe 4. *Potentílleæ.—Calyx persistent, with an epicalyx : carpels* 4 *or more : ovules* 1 *in each carpel : fruit an etærio of achenes.*

4. DRÝAS.—*Leaves* simple ; *scape* 1-flowered ; *styles* becoming feathery.

5. GÉUM.—*Leaves* pinnate ; *scape* several-flowered ; *styles* becoming hooked awns.

6. FRAGÁRIA.—*Leaves* ternate ; *achenes* on fleshy receptacle ; *style* not elongating.

7. POTENTÍLLA.—*Leaflets* 3, 5, or many, palmate or pinnate ; *achenes* on dry receptacle ; *style* not elongating.

Tribe 5. *Poteriéæ.—Petals 5 or absent : carpels* 1—5 : *fruit* 1—5 *achenes* (1-*seeded*) *enclosed in small dry calyx-tube.*

8. ALCHEMÍLLA.—*Sepals* 4 or 5, with an epicalyx ; *petals* absent ; *stamens* 1—4 ; *achenes* 1—5.
9. AGRIMÓNIA.—*Sepals* 5 ; *petals* 5 ; *stamens* 12—20 ; *achenes* 2.
10. POTÉRIUM.—*Sepals* 4 ; *petals* absent ; *stamens* 4—30 ; *achenes* 1—3.

Tribe 6. *Róseæ.—Petals* 5 ; *carpels many*, 1-*seeded, enclosed in the large fleshy calyx-tube.*

11. RÓSA.—*Sepals* 5 ; *petals* 5 ; *stamens* indefinite.

Tribe 7. *Pómeæ.—Petals* 5 ; *carpels* 1—5, 1—2-*seeded ; fruit a pome.*

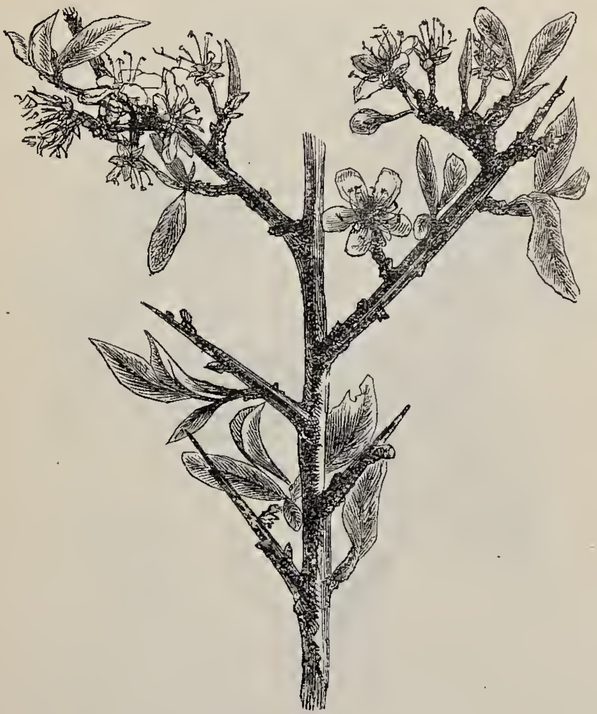
12. PÝRUS.—*Fruit* 2—5-chambered ; *core* horny.
13. CRATÆGUS.—*Fruit* 1—5-chambered ; *core* stony.
14. COTONEÁSTER.—*Fruit* 2—5-chambered ; *core* stony, projecting.

1. PRÚNUS (Plum, Cherry).—Trees or shrubs ; *leaves* simple, serrate, with glands on the petiole ; *sepals* 5, deciduous ; *petals* 5, white ; *stamens* 15—20 ; *fruit* a drupe with a smooth stone. (Name classical.)

* *Leaves convolute : drupe glaucous.*

1. *P. spinósa* (Blackthorn or Sloe).—*Branches* very spinous with blackish bark ; *leaves* narrow, elliptical, smooth above, slightly downy near the midrib below ; *flowers* mostly solitary, appearing before the leaves ; *fruit* nearly round, ½ in. in diameter, black and very austere.—Woods and hedges ; abundant. A well-known bush deriving its name from the hue of its bark, which is much darker than that of the Haw-

thorn or Whitethorn, as it is often called. The leaves are said to be used to adulterate tea, and the fruit, which is so austere that a drop of its juice placed on the tongue will produce a roughness on the throat and palate perceptible for a long time, is said to enter largely into the composition of spurious port wine.—Fl. March, April. Perennial.



PRÚNUS SPINÓSA (*Sloe or Blackthorn*).

2. *P. insitítia* (Bullace).—*Branches* ending in a spine, with brown bark; *leaves* elliptical, downy beneath; *flowers* in pairs, appearing with the leaves; *fruit* globose, pendulous, nearly 1 in. in diameter,

black or yellow, more palatable than the sloe.—Woods and hedges. Larger than the last.—Fl. April, May. Perennial.

3.* *P. doméstica* (Wild Plum).—A small tree without spines, with brown bark; *leaves* downy on the veins beneath; *fruit* oblong, an inch or more in diameter, sweet.—The original of our cultivated Plums, not indigenous in Europe.—Fl. April, May. Perennial.

PRÚNUS ÁVIUM (*Gean*).

*** Leaves conduplicate : drupe polished.*

4. *P. Ávium* (Wild Cherry, Gean).—A tree 20—30 feet high, with smooth bark and few or no suckers ; *leaves* drooping, abruptly pointed, downy beneath ; *flowers* in umbels ; *calyx-tube* contracted above ; *fruit* heart-shaped, bitter, black, or red.—Woods and hedges ; common. A highly ornamental tree, not only on account of its elegant white flowers in spring, but even more so in autumn, when its leaves

PRÚNUS PÁDUS (*Bird Cherry*)

assume a bright crimson hue. As soon as it is ripe the fruit is greedily devoured by birds. This species is the origin of the Morella Cherry.—Fl. May. Perennial.

5. *P. Cérasus* (Dwarf or Red Cherry).—A shrub not more than 8 feet high, with redder bark and many suckers; *leaves* not drooping, smooth on both sides; *flowers* in umbels; *calyx-tube* not contracted; *fruit* round, juicy, acid, and red. The origin of the sweet varieties of cultivated cherries.—Hedges; less common.—Fl. May. Perennial.

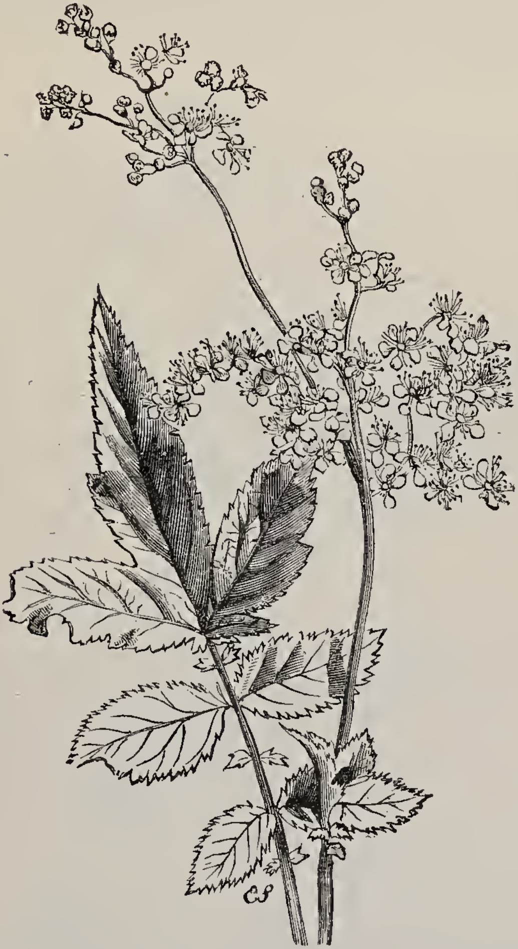
6. *P. Pádus* (Bird Cherry).—A handsome small tree; *leaves* narrow, egg-shaped; *flowers* in pendulous racemes; *fruit* ovoid, black, bitter.—In the North of England not uncommon in a wild state, and common elsewhere in shrubberies. The clusters of flowers and drupes are not unlike those of the Portugal Laurel, a nearly allied species, but the leaves are not evergreen. —Fl. May. Perennial.

2. Spirǽa.—Herbs or shrubs; *leaves* scattered, generally stipulate; *flowers* numerous, small, in cymes; *sepals* 4 or 5, persistent; *carpels* 5 or more; *ovules* 2 or more in each carpel; *fruit* a ring of follicles. (Name from the Greek *spéira*, a coil.)

1.* *S. salicifólia* (Willow-leaved Spiræa).—A shrub with simple exstipulate *leaves* and spike-like clusters of rose-coloured *flowers*.—Moist woods in the north and in Wales; not indigenous.—Fl. July, August. Perennial.

2. *S. Ulmária* (Meadow-sweet, Queen of the Meadows).—A tall, herbaceous plant, 2—4 feet high; *leaves* interruptedly pinnate, white and downy beneath, terminal leaflet very large and lobed; *flowers* in densely crowded, erect, compound cymes, creamy-white, very fragrant.—Moist places; common.—Fl. June—August. Perennial.

3. *S. Filipéndula* (Dropwort).—A herb about a foot high, with short *rhizome* and nodulose *rootlets ; leaves* interruptedly pinnate, leaflets cut into narrow serrated segments ; *flowers* in crowded, erect, compound



SPIRÆA ULMÁRIA (*Meadow-sweet, Queen of the Meadows*).

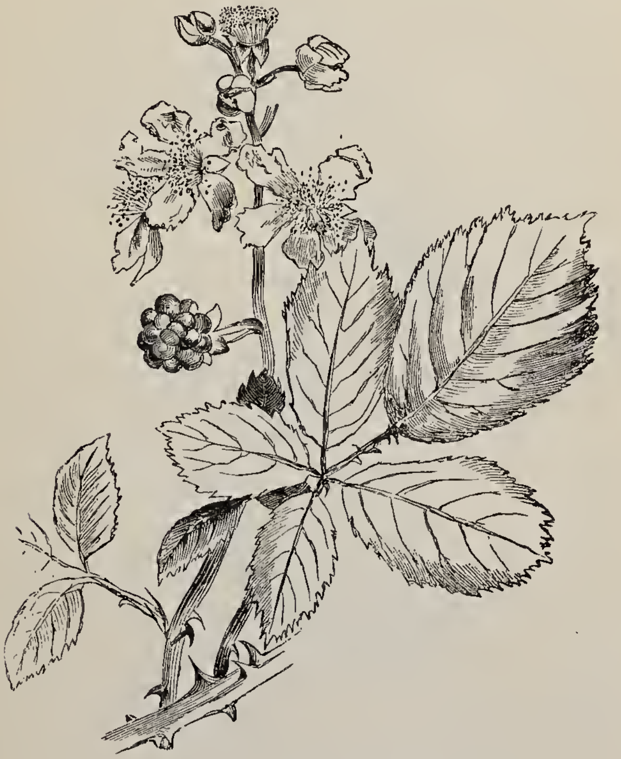
cymes, pink externally in bud, when open, white and scentless.—Dry pastures on a limestone soil. Distinguished from the preceding by its elegantly cut foliage, pink buds, and whiter, scentless blossoms. A double-flowered variety is common in gardens.—Fl. June, July. Perennial.

3. Rúbus (Bramble).—Shrubs or herbs, usually prickly; *leaves* scattered, stipulate; *flowers* in terminal and axillary clusters, rarely solitary, white or pink; *sepals* 5, persistent; *petals* 5; *carpels* many, on a convex, spongy *receptacle; ovules* 2 in each carpel; *fruit* an etærio of 1-seeded drupels. (Name classical.)

1. *R. idæus* (Raspberry).—A shrub with many suckers, and nearly erect, round, glaucous, prickly *stem; leaves* pinnate, of 3—5 leaflets, white and hoary beneath; *flowers* drooping; *fruit* hoary, red, or amber-coloured, separating from the receptacle when ripe. —Rocky woods; common. The origin of the garden raspberry, which differs but little from it.—Fl. May —August. Perennial.

2. *R. fruticósus* (Bramble or Blackberry).—The collective name for a large number of closely allied forms, which, though many of them have fairly definite distinctive characters, are difficult to discriminate. They agree in being shrubs, without suckers, with prickly *stems*; *leaves* of 3—5 leaflets arranged palmately or pedately; *flowers* in erect compound panicles; and *fruit* claret-colour or black, not separating from receptacle when ripe. Nearly a hundred species have been described as British, besides many named varieties; but it will be sufficient here to describe the nine main groups under which these puzzling forms are arranged. Group I., *Suberécti*—*Stems* usually sub-erect, rarely rooting at the tip, glabrous or very slightly hairy, without bristles or gland-tipped hairs, with *prickles* mostly equal and

confined to the angles of the stem; *stipules* linear; *leaves*, when mature, green beneath; *sepals* green, with narrow white margin; *drupels* numerous. Group II., *Rhamnifólii*—*Stems* high-arching, often rooting from a callus at the tip and thus giving rise to a multitude of individuals, glabrous, or with few hairs, usually without stalked glands; *prickles* mostly equal and confined to the angles; *sepals* grey, or white-felted, with no conspicuous white margin, often reflexed in fruit; *fruit* large, black, juicy. Group



RÚBUS FRUTICÓSUS (*Blackberry*).

III., *Discolóres*—*Stems* arched or prostrate, rooting at the end, with adpressed hairs and equal strong prickles, with no stalked glands; *leaves* quinate, white-felted beneath; *sepals* grey, reflexed in fruit; *petals* often pink; *drupels* small. Group IV., *Silvátici*—*Stems* arched, prostrate, rooting at the end, with spreading hairs, moderate-sized nearly equal prickles, and few stalked glands or bristles; *leaves* usually green beneath; *sepals* usually reflexed in fruit; *petals* sometimes deep pink. Group V., *Egrégii*—*Stems* arched or prostrate, generally with some scattered stalked glands and bristles, with subequal prickles chiefly on the angles; *flower-stalks* with some stalked glands; *sepals* seldom reflexed. Group VI., *Rádulæ*—*Stems* generally low-arching and rooting, rough throughout with numerous bristles and stalked glands, with subequal prickles, the larger ones nearly confined to the angles; *flower-stalks* with numerous short-stalked glands and bristles. Group VII., *Koehleriáni*—*Stems* low-arching or prostrate, rooting, clothed with very unequal scattered prickles, bristles and stalked glands, the larger prickles strong; *petals* often pink. Group VIII., *Bellardiáni*—Usually small, low-growing plants; *stems* mostly prostrate and roundish, rooting and often glaucous, densely clothed with unequal stalked glands, bristles and weak prickles; *leaflets* all stalked; *stipules* filiform. Group IX., *Cǽsii* (Dewberry)—*Stems* low-arching or creeping, roundish or slightly angular, rooting, glaucous, with prickles mostly slender; *flowers* large; *fruit* of a few large drupelets, often with a grey bloom.—Most of the species flower from June to August, and ripen their fruit in September and October.

3. *R. saxátilis* (Stone Bramble).—A small herbaceous species; *stem* rooting, 1—2 feet high, with few scattered bristles, or none; *leaves* of 3 leaflets; *flowers* few together, umbellate; *petals* small white;

fruit of 1—4 distinct scarlet persistent drupels on a flat receptacle.—Stony places, chiefly in the North.—Fl. June—August. Perennial.

4. *R. Chamæmórus* (Cloudberry).—A very distinct species, with a long subterranean *rhizome ;* *flowering-branch* erect, 4—8 in. high, without prickles; *leaves* obtusely 5—7-lobed; *flowers* large, terminal, solitary, white, diœcious; *fruit* of a few large drupelets, first red, then orange, with the colour, fragrance, and taste of apricots.—Alpine

DRYAS OCTOPÉTALA (*Mountain Avens*).

peat-bogs in the north. This fruit, the *avrons* of Scotland, *moltebeere* of Norway, or *maroshka* of Northern Russia, makes a delicious preserve.—Fl. June, July. Perennial.

4. DRYAS (Mountain Avens).—Prostrate tufted herbs; *leaves* simple, white beneath; *stipules* adnate to the petiole; *flowers* large, solitary; *sepals* 8 or 9 in one whorl, valvate, persistent; *petals* 8 or 9; *carpels* many, sunk in the calyx-tube, one-ovuled; *styles* persistent, feathery; *fruit* an etærio of achenes. (Name from the Greek *drúas*, from the resemblance of the leaves to those of the oak.)

1. *D. octopétala* (Mountain Avens).—The only British species; *leaves* oblong, coarsely crenate-serrate, hoary beneath; *flowers* an inch or more across, white; petals 8.—In mountainous, chiefly limestone, districts in the north; rare. An easily recognised and handsome flower.—Fl. June, July. Perennial.

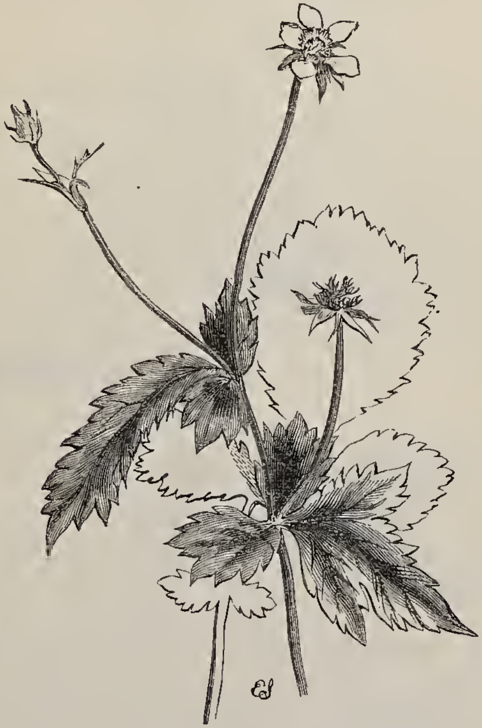
5. GÉUM (Avens).—Erect herbs; *leaves* lyrately-pinnate; *stipules* adnate to the petiole; *scape* usually several-flowered; *sepals* 5, persistent, with an epicalyx of 5 bracteoles; *petals* 5; *carpels* many, 1-ovuled; *styles* persistent, jointed, hooked; *fruit* an etærio of achenes. (Name from the Greek *geuo*, I taste, the roots being aromatic.)

1. *G. urbánum* (Common Avens, Herb Benet).—An erect, hairy plant, 1—2 feet high; *radical leaves* pinnate; *cauline leaves* ternate; *stipules* leafy, rounded and cut; *flowers* erect, ½—¾ in. across, yellow; upper joint of the stiff persistent *style* shorter, smooth.—Hedges and thickets; common.—Fl. June—August. Perennial.

2. *G. riválé* (Water Avens).—A handsome plant, stouter and more hairy than the preceding, differing in having smaller *stipules*; drooping *flowers*, 1—1½

in. across; reddish-brown *sepals;* obcordate, yellow, pink-tinged, veined *petals;* a stalk or *carpophore* below the fruit; and the two joints of the persistent *style* equal and hairy.—Damp places; not uncommon.—Fl. May—July. Perennial.

G. intermédium, partaking of the characters of both the above species, is probably a hybrid between them.



GÉUM URBÁNUM (*Common Avens, Herb Benet*).

6. FRAGÁRIA (Strawberry).—Herbs with runners; *leaves* generally ternate; *stipules* adnate to the petiole;

sepals 5, persistent, with an epicalyx of 5 bracteoles, valvate; *petals* 5; *carpels* many, 1-ovuled; *styles* lateral, persistent; *fruit* an etærio of achenes which are sunk in the surface of a fleshy receptacle. (Name from the Latin *fraga*, strawberries, which is probably connected with *fragrans*, fragrant.)

1. *F. vésca* (Wood Strawberry).—*Leaflets* sessile, bright green, hairy; *peduncle* erect, few-flowered, with spreading hairs; *pedicels* drooping in fruit, with adpressed hairs; *flowers* white, ½ in. or more across; *calyx* reflexed in fruit.—Woods and thickets; common. A well-known plant, distinguished by the above characters from the Barren Strawberry (*Potentílla Fragariástrum*), which is often mistaken for it by young botanists. The Strawberry apparently derives

FRAGÁRIA VÉSCA (*Wood Strawberry*).

its name from the custom of laying straw between the rows of plants in gardens.—Fl. April—July. Perennial.

2.* *F. elátior* (Hautboy Strawberry), a garden escape, probably originally derived by cultivation from the preceding, is larger, more hairy, with spreading hairs, and has stalked *leaflets* and some diœcious flowers.—Fl. June—September. Perennial.

7. POTENTÍLLA (Cinquefoil). — Herbs, rarely shrubby; *leaves* pinnate or palmate of 3, 5, or more leaflets; *stipules* adnate to the petiole; *flowers* generally yellow or white; *sepals* 5, or rarely 4, persistent, with an epicalyx of 5 or 4 bracteoles; *petals* 5, rarely 4; *stamens* 4—10, or many; *carpels* 4—10, or many, 1-ovuled; *fruit* an etærio of achenes on a small dry receptacle; *style* not elongating. (Name from the Latin *potens*, powerful, from the medicinal properties of some species, especially, perhaps, of *P. palústris*, an astringent tonic.)

* *Stamens many: achenes many, glabrous or nearly so: receptacle concave.*

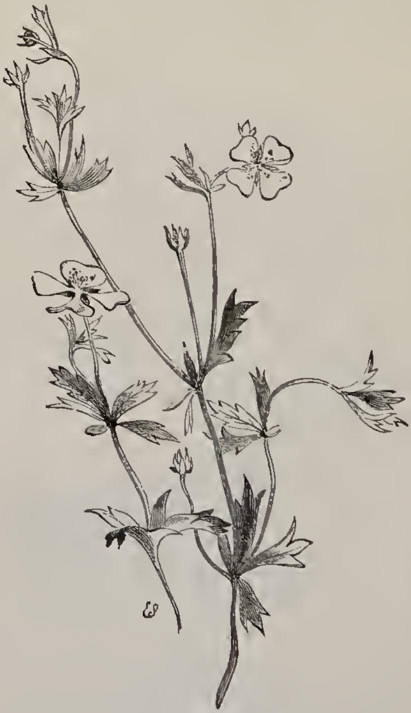
1.* *P. norvégica*, with *stem* erect, 8—10 in. high; *leaves* palmate; and *flowers* yellow in crowded terminal racemes, has been found in Burwell Fen, Cambridgeshire, and in Yorkshire; but has probably been introduced with Norwegian timber. Annual.

2.* *P. hírta*, with *stem* erect; *leaves* of 5—7 much-toothed leaflets, obovate on the radical and linear on the cauline leaves, is also not indigenous.

3. *P. Fragariástrum* (Barren Strawberry).—Prostrate, without runners, silky; *leaves* ternate; *leaflets* obovate, crenate, very hairy beneath; *peduncles* slender; *flowers* white, not more than ½ in. across; *petals* short, notched.—Banks and hedges; abundant.

One of the earliest spring flowers, often confounded by beginners with the wild strawberry, from which the above characters serve to distinguish it.—Fl. January—May. Perennial.

4. *P. vérna* (Spring Cinquefoil).—A small woody hairy plant, about 5 in. long; *leaves* of 5—7, obovate serrate *leaflets*, hairy on the edge and on the veins beneath; *flowers* yellow, 2—3 together, ½ in. across.—Dry pastures; not common.—Fl. April—June. Perennial.

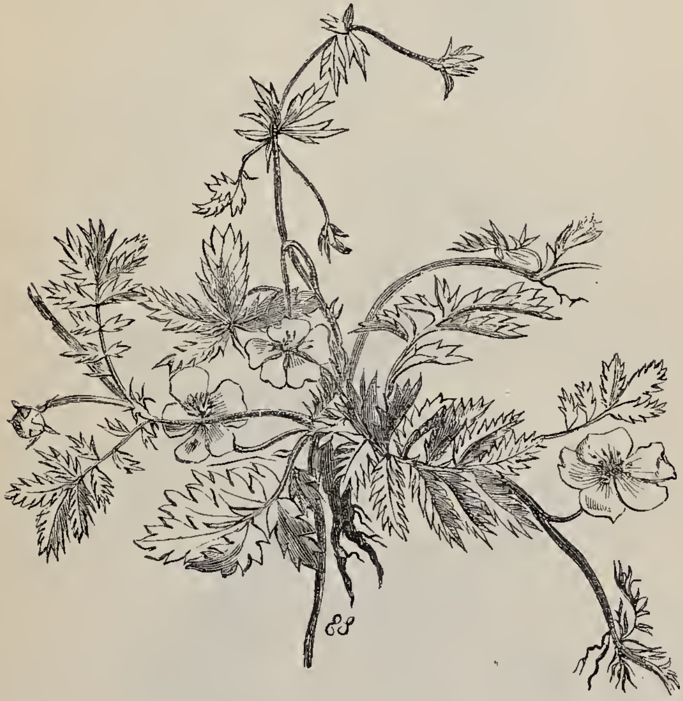


POTENTÍLLA SILVÉSTRIS (*Common Tormentil*).

5. *P. rúbens* (Alpine Cinquefoil).—A larger, more erect, but closely allied species; *stem* 4—10 in.

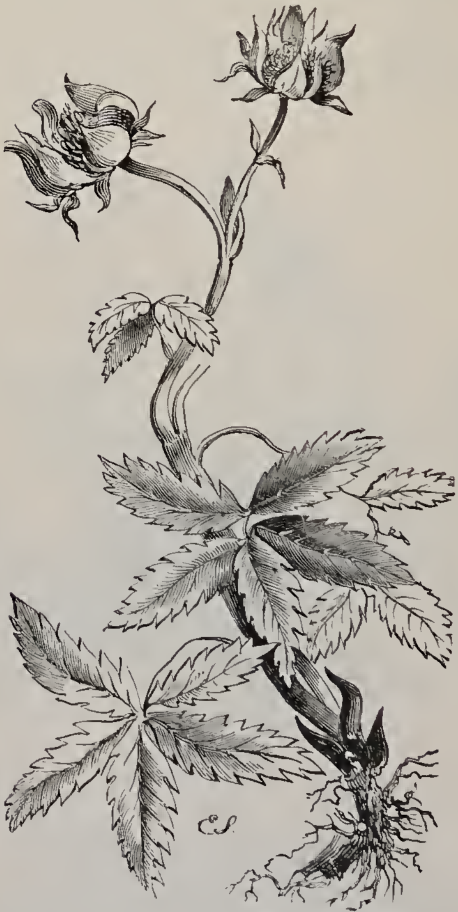
high; *flowers* 1 in. across.—Alpine rocks in Scotland, Wales, and the North of England; rare.—Fl. June, July. Perennial.

6. *P. silvéstris* (Common Tormentil).—A small, sub-erect plant; *rhizome* woody; *stems* 6—10 in. high, slender, leafy, with curly hairs; *leaves* of 3, or rarely 5, cuneate, lobed leaflets; *cauline leaves* sessile; *stipules* leafy, deeply cut; *flowers* in corymbose cymes, not more than $\frac{3}{4}$ in. across, yellow, usually with 4 sepals and 4 petals.—Banks and heaths; very common—Fl. all the summer. Perennial.



POTENTÍLLA ANSERÍNA *and* P. RÉPTANS.

7. *P. procúmbens* (Trailing Tormentil).—A very closely allied species, differing chiefly in a more



POTENTÍLLA PALÚSTRIS (*Marsh Cinquefoil*).

prostrate habit, the *cauline leaves* being stalked and the *flowers* being solitary, or nearly so, and rather larger.—Woods and banks; common.—Fl. June—August. Perennial.

8. *P. réptans* (Creeping Cinquefoil).—*Stem* slender, creeping, rooting at the nodes; *leaves* quinate, stalked; *leaflets* obovate, serrate, hairy; *flowers* solitary, about an inch across, yellow; *sepals* and *petals* 5 each.—Meadows and waysides; common. Hybrids between this species and the two preceding occur.—Fl. June—August. Perennial.

9. *P. Anserína* (Silver-weed, Goose-grass).—A familiar, easily recognisable plant, with runners; *leaves* interruptedly pinnate; *leaflets* deeply serrate or pinnatifid, densely silky, with white hairs on the under side or on both surfaces; *flowers* solitary, yellow, much as in the preceding.—Roadsides; common.—Fl. June—August. Perennial.

10. *P. rupéstris* (Rock Cinquefoil), a tall, erect species, 1—2 feet high, with pinnate *leaves* of 3—7 leaflets and large white *flowers*, is found only on limestone rocks in Montgomeryshire.—Fl. May, June. Perennial.

11. *P. argéntea* (Hoary Cinquefoil).—*Stem* nearly prostrate; *leaves* quinate, white underneath with adpressed wool, their edges rolled back; *flowers* small, yellow, several together.—Dry gravelly places; not common.—Fl. June, July. Perennial.

** *Stamens many: achenes many, hairy: receptacle very hairy.*

12. *P. fruticósa* (Shrubby Cinquefoil).—A much-branched shrub, 2—4 feet high; *leaves* pinnate, of 3—5 leaflets, silky, revolute; *flowers* large, yellow, several together, terminal.—Rocky places in the North of England and West of Ireland; rare.—Fl. June, July. Perennial.

*** *Stamens many : achenes many, smooth : receptacle conical, spongy, downy.*

13. *P. palústris* (Marsh Cinquefoil).—A stout, herbaceous plant, about a foot high ; *rhizome* woody; *stems* ascending, reddish brown, leafy ; *leaves* pinnate, of 5—7 leaflets ; *stipules* large, membranous ; *flowers* few together, large, dingy purplish-brown ; *sepals* larger than the petals.—Peat-bogs ; frequent.—Fl. June, July. Perennial.

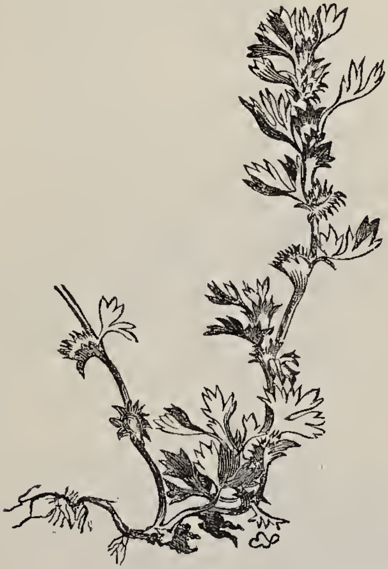
POTENTÍLLA SÍBBALDI (*Procumbent Sibbaldia*).

**** *Stamens 4—10 : achenes 4—10, glabrous : receptacle concave, downy.*

14. *P. Síbbaldi* (Procumbent Sibbaldia).—A small

prostrate plant; *leaves* ternate; *leaflets* wedge-shaped, ending in 3 points, hairy; *flowers* few, small, yellow, in crowded terminal cymes.—Dry summits of Highland mountains; rare.—Fl. June, July. Perennial.

8. Alchemílla (Lady's Mantle).—Herbs with simple, orbicular, more or less divided stipulate *leaves*; *flowers* minute, in corymbose cymes, generally tetramerous, apetalous; *calyx*, with an epicalyx, persistent; *stamens* 1—4, inserted at the mouth of the calyx-tube; *disk* annular at the mouth of the calyx-tube; *carpels* 1—5, 1-ovuled; *styles* lateral; *fruit*, 1—4 achenes within the calyx-tube. (Name said to indicate the value of the genus in alchemy).



ALCHEMÍLLA ARVÉNSIS (*Field Lady's Mantle*).

? 1. *A. arvénsis* (Parsley Piert, Field Lady's Mantle).

—A small inconspicuous hairy weed, 3—8 in. long; *leaves* small, 3-lobed, lobes wedge-shaped, and cut, as also are the *stipules*; *flowers* minute, crowded in the axils of bracts, greenish, concealed by the leaves.—Dry places; common.—Fl. May—August. Annual.

2. *A. vulgáris* (Common Lady's Mantle).—A herbaceous plant about a foot high; *leaves* large, kidney-shaped, plaited, softly downy, 7—9 lobed, on long stalks, serrate; *stipules* ochreate, toothed; *flowers* numerous, small, yellowish-green, in loose branching cymes.—Moist hilly pastures; common.—Fl. June—August. Perennial.

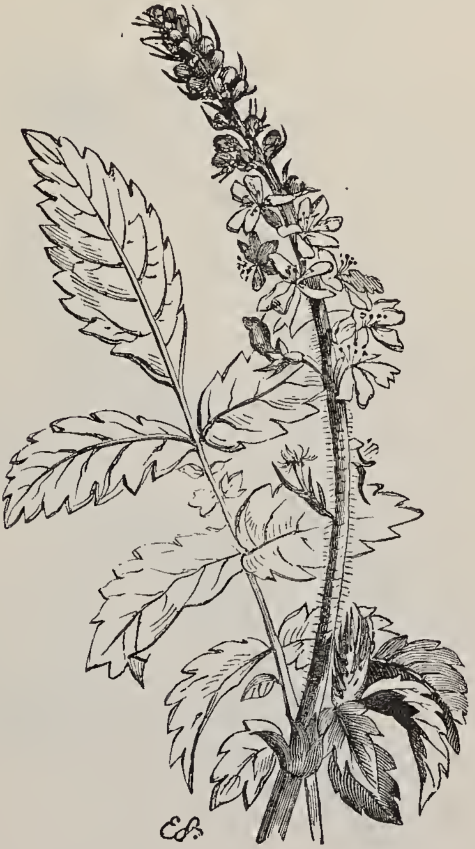
3. *A. alpína* (Alpine Lady's Mantle).—A beautiful plant with small palmate *leaves* of 5—7 oblong, serrate leaflets, lustrously white and satiny, almost metallic underneath; *flowers* inconspicuous.—Mountains; not common.—Fl. June—August. Perennial.

4. *A. argéntea* (Silver Lady's Mantle).—An allied form, differing in having larger, suborbicular, peltate *leaves*, the lobes of which only extend two-thirds of the distance from their margin to their base.—Occurs in the North of Scotland.—Fl. June, July. Perennial.

9. Agrimónia (Agrimony).—Herbs with stipulate, pinnate, serrate *leaves* and terminal bracteate spike-like racemes of small yellow *flowers*; *sepals* 5, imbricate, persistent; *petals* 5; *stamens* 12—20; *carpels* 2, 1-ovuled, within the spinous calyx-tube; *fruit* of 1 or 2 achenes. (Name of Greek origin.)

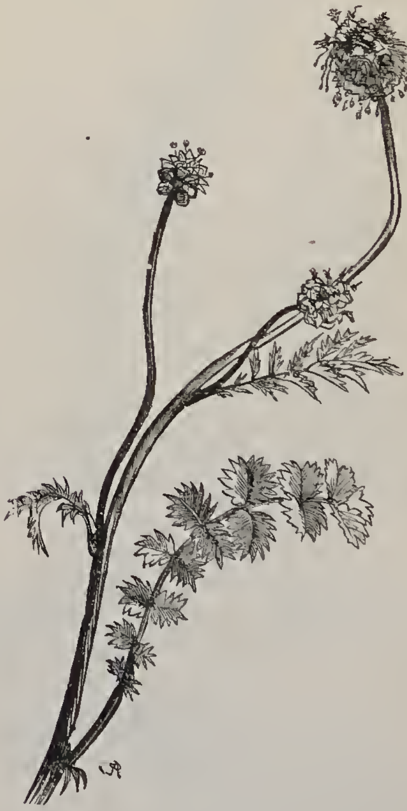
1. *A. Eupatória* (Common Agrimony).—A slender, herbaceous plant, 1—2 feet high, shaggy with soft hairs; *leaves* interruptedly pinnate, deeply toothed; *flowers* shortly stalked and distant on the long, tapering spike-like raceme; *calyx-tube* obconic, deeply furrowed, spinous round its mouth, woody in fruit.—Fields and roadsides; common.—Fl. June—August. Perennial.

2. *A. odoráta* (Scented Agrimony).—A closely allied species, more branched, with an aromatic resinous scent, with *flowers* larger and closer, and the *calyx-tube* bell-shaped and not furrowed. Less common. —Fl. June, July. Perennial. These two species are said to be tonic, and are made into tea by village herbalists.



AGRIMÓNIA EUPATÓRIA (*Common Agrimony*).

10. Potéríum (Burnet).—Erect herbs with pinnate *leaves*; *stipules* adnate to the sheathing petiole; *flowers* small, in dense long-peduncled capitate cymes, often polygamous; *calyx-tube* persistent, with 4 winged angles in fruit; *sepals* 4, imbricate, deciduous; *petals* absent; *stamens* 4—30 with slender filaments and pendulous exserted anthers; *carpels* 1—3, 1-ovuled, only one ripening; *stigma* tufted; *achenes* solitary,



POTÉRÍUM SANGUISÓRBA (*Salad Burnet*).

enclosed in the hardened calyx-tube. (Name from the Greek *potérion*, a tankard, one species being used in cool drinks.)

POTÉRÍUM OFFICINÁLÉ (*Great Burnet*).

1. *P. Sanguisórba* (Salad Burnet).—Glabrous, or

nearly so, about a foot high; *leaves* of 5—10 pairs of oblong, coarsely serrate leaflets, having the taste and smell of cucumber; *peduncle* angular; *flower-heads* reddish, the upper flowers producing their crimson *stigmas* before the lower ones produce their 20—30 pendulous *stamens; calyx-tube* with netted veins between the 4 wings.—Dry pastures, especially on a calcareous soil.—Fl. June—August. Perennial.

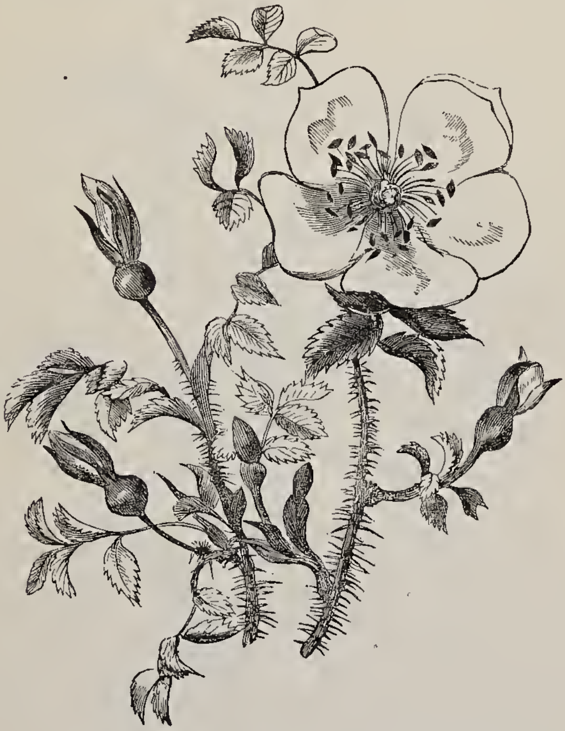
2.* *P. polygamum* (Prickly Salad-Burnet).—A closely-allied species with a larger *fruit* and prickly wings to the calyx-tube.—Cultivated on chalky soil. —Fl. June, July. Perennial.

3. *P. officinálé* (Great Burnet).—A tall erect branched plant; *leaves* pinnate of 9—13 oblong-cordate, serrate, distinctly stalked leaflets; *flowers* in oblong or cylindric, long-stalked heads, purplish-brown, all perfect; *stamens* 4, not exserted; *calyx-tube* in fruit smooth between the 4 wings.—Damp meadows; not uncommon.—Fl. June—August. Perennial.

11. Rósa (Rose).—Shrubs, usually prickly; *leaves* pinnate, serrate; *stipules* adnate to the sheathing petiole; *flowers* terminal; *calyx-tube* persistent, fleshy, contracted at the mouth, with 5 leafy, imbricate *sepals*; *petals* 5; *stamens* indefinite, inserted on the disk at the mouth of the calyx-tube; *carpels* generally numerous, in the bottom of the calyx-tube, 1-ovuled; *fruit*, an etærio of achenes. (Name Classical).

Botanists differ widely in their conceptions of the species of this difficult genus; but the indigenous British forms fall into some twelve or thirteen fairly distinct groups, most of which are accepted by all authorities and their sequence generally agreed upon. Hybrids, however, occur between members of different groups. In collecting herbarium specimens of Roses, a twig bearing a fully-formed fruit, with the sepals still on it, should be preserved.

1. *R. pimpinellifólia* (Burnet or Scotch Rose).—An erect, much-branched shrub, 1—4 feet high, covered with very unequal, nearly straight prickles, passing into stiff bristles and glandular hairs; *leaves* of 7—9 simply serrated, smooth leaflets; *flowers* solitary, white; *sepals* undivided, smooth; *fruit* sub-globose, dark purple.—Dry sandy places, especially near the sea; common.—Fl. May, June. Perennial.



RÓSA PIMPINELLIFÓLIA (*Burnet-leaved Rose*).

2. *R. involúta* differs in having its *leaves* usually doubly serrate and downy, and glandular beneath;

its *flowers* 1—3 together; and its *fruit* red.—Chiefly in the north.—Fl. June. Perennial.

3. *R. hibérnica* (Irish Rose) has stout, curved prickles; *leaflets* simply serrate, glabrous above, glaucous and slightly pubescent beneath; *flowers* 1—12 together; *sepals* pinnate, smooth; *fruit* red. Chiefly in the north; rare.—Fl. May—August. Perennial.

4. *R. móllis* (Soft-leaved Rose).—A tall, erect bush with scattered, uniform, nearly straight, slender prickles; *leaflets* ovate, doubly serrate, softly downy, especially beneath; *flowers* 1—3 together, deep rose-colour; *sepals* slightly pinnate, persistent, connivent in fruit; *fruit* globose, glandular, red.—In the north. —Fl. June, July. Perennial.

5. *R. tomentósa* (Downy-leaved Rose).—*Stem* erect with stout, arching branches, 6—10 feet long, with mostly uniform, slender, straight or slightly curved prickles; *leaflets* doubly serrated, downy, especially beneath; *flowers* 1—3 together, pink or white; *sepals* very pinnate; *fruit* oblong-urceolate, red.—Hedges and thickets; common.—Fl. June, July. Perennial.

6. *R. rubiginósa* (Sweet Briar).—An erect, compact bush with many prickles, the larger ones hooked, the smaller unequal, straight; *leaflets* doubly serrate, downy, and glandular beneath, mostly rounded at the base, very fragrant; *flowers* 1—4 together, deep rose-colour; *sepals* very pinnate, persistent; *fruit* pear-shaped, becoming globose, red.—Chiefly on chalk. The Eglantine of the poets, with the exception of Milton, whose "twisted eglantine" is the Honeysuckle. —Fl. May—July. Perennial.

7. *R. micrántha* (Small-flowered Sweet Briar).—A small bush with long arched branches, equal hooked prickles, and faint odour; *leaves* doubly serrate, downy and glandular beneath, rounded at the base; *flowers* 1 in. across, on bristly stalks, pale rose-colour; *fruit*

small, urceolate, scarlet.—Not common.—Fl. July, August. Perennial

8. *R. sépium* (Slightly-scented Briar).—A similar species, differing in having rather unequal hooked prickles intermixed with a few bristles and glandular hairs; *leaflets* less rounded at the base; *flowers* usually with smooth stalks; *sepals* more pinnate and persistent.—Local; uncommon.—Fl. June. Perennial.

RÓSA CANÍNA (*Dog-Rose*).

9. *R. obtusifólia* (Blunt-leaved Rose).—A large bush with long, arching, glabrous branches, and large hooked prickles; *leaflets* doubly serrate, broadly

rounded at the base, glandular and with prominent veins beneath; *flowers* white or pale pink, generally with smooth stalks; *sepals* reflexed and deciduous; and *fruit* small, sub-globose. These forms, not very sharply separated from the following, seem to be local.

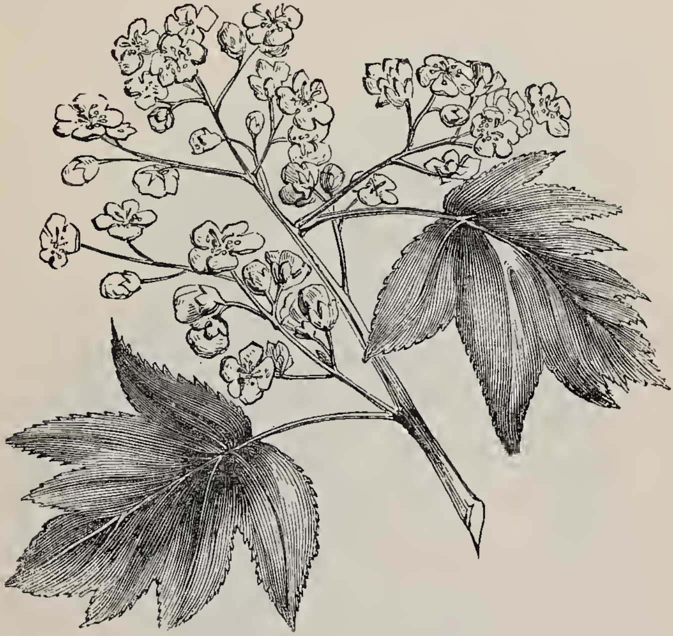
10. *R. canína* (Dog-Rose).—Large bushes with long arched branches with uniform hooked prickles; *leaflets* mostly without glands, or with a few on the veins beneath; *flowers* few together or solitary, generally on smooth stalks; *sepals* pinnate, reflexed, falling before the fruit changes colour; *styles* free.—Hedges and bushy places; abundant. This is the Common Hedge Rose, a flower belonging exclusively to summer, and welcomed at its first appearance scarcely less warmly than the early Primrose in spring. The colour of the flower varies from white to a deep blush, and the leaves also differ considerably; but the above characters will be found to include all the principal varieties.—Fl. June, July. Perennial.

11. *R. glaúca* (Glaucous Rose), a group more locally represented, differs in having its *leaflets* often glaucous, and not glandular beneath, and its *sepals* ascending after the fall of the petals, and not falling until after the fruit has become crimson.

12. *R. stylósa* (Close-styled Rose).—A tall, erect bush with uniform, stout, strongly-hooked prickles; *leaflets* eglandular, pubescent beneath; *peduncles* long, bristly; *sepals* pinnate, reflexed, deciduous; *styles* united into a central column.—Uncommon. — Fl. June, July. Perennial.

13. *R. arvénsis* (Trailing Rose).—A glabrous, trailing species with purple branches; *leaflets* glaucous beneath; *flowers* white; *sepals* purple, slightly pinnate, reflexed, deciduous; *styles* united in an exserted column; *fruit* sub-globose, small.—Woods and hedges; common in the South of England.—Fl. June—August. Perennial.

12. Pýrus (Service, Pear, Apple, Medlar, and Rowan).—Trees and shrubs; *leaves* deciduous, simple or pinnate; *stipules* deciduous; *flowers* in terminal cymes; *calyx-tube* urceolate; *sepals* 5; *petals* 5; *stamens* many; *carpels* 2—5, imbedded in the calyx-tube, 2-ovuled; *fruit* a 2—5-chambered pome; *core* brittle, horny or bony; chambers 1—2-seeded. (Name Classical.)


PÝRUS TORMINÁLIS (*Wild Service Tree*).

1. *P. torminális* (Wild Service Tree).—A small tree with downy twigs; *leaves* glabrescent, simple, 6—10-lobed, cordate, serrate; lobes triangular; *flowers* many, small, white, in compound corymbose cymes; *fruit* small, green, spotted with brown, 2-chambered, 2-seeded; core brittle.—Woods and

hedges in the South of England. The mottled fruit is sold under the name of Chequers.—Fl. April, May. Perennial.

2. *P. Ária* (White Beam).—A shrub or small tree; *leaves* large, egg-shaped, irregularly lobed and serrate, snowy-white-felted beneath, with 5—14 veins on each side; *flowers* and *fruit* much as in the preceding; but the latter dotted with red.—Chalky banks and limestone rocks.—Fl. May, June. Perennial.

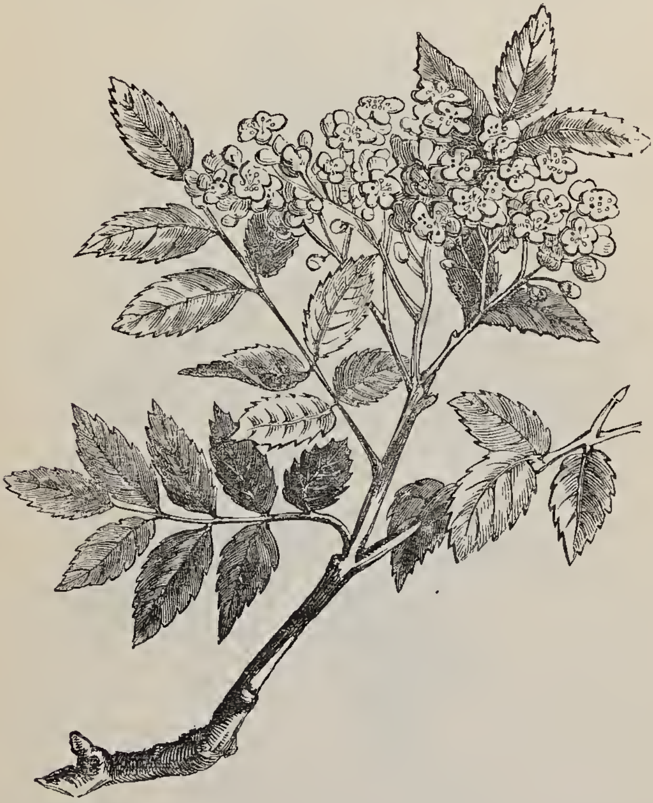
PÝRUS ÁRIA (*White Beam*).

3. *P. rotundifólia* (Round-leaved White Beam), differing chiefly in its *leaves*, which are rounded at the base, more lobed and greyish beneath, and its brown *fruit*, occurs rarely in woods in the west.

4. *P. mínima* (Least White Beam).—A small, spreading, much-branched, slender shrub; *leaves*

linear-oblong, pinnately 3—4-lobed, ashy-felted beneath; *flowers* small, creamy-white; *fruit* small, globose, coral-red, bitter.—Limestone rocks, Breconshire.—Fl. June. Perennial.

5. *P. intermédia* (Broad-leaved White Beam).—A small tree with *leaves* similar to those of the preceding, with 5—9 veins on each side; but with dark or reddish-brown *fruit*.—Occurs rarely in hilly woods.—Fl. May. Perennial.



PÝRUS AUCUPÁRIA (*Fowlers' Service-tree*).

6. *P. pinnatífida*, with *leaves* pinnate at the base, deeply pinnatifid at the apex, and grey-webbed beneath, may be a hybrid between the preceding species and the Rowan.—Arran in the Clyde. Perennial.

7.* *P. doméstica* (Service-tree).—A small tree with pinnate, serrate *leaves*, downy beneath, and a small pear-shaped *fruit*, did occur in Wyre Forest, Worcestershire; but was not indigenous.—Fl. May. Perennial.

PÝRUS COMMÚNIS (*Wild Pear*).

8. *P. Aucupária* (Rowan-tree, Mountain Ash,

Fowlers' Service).—One of the most elegant of British trees, small, with smooth roan or ash-grey bark; *leaves* pinnate, of 13—17 leaflets, serrate, glabrescent; *flowers* small, cream-white, in large, corymbose cymes; *fruits* globose, scarlet, with yellow flesh, 2—4-chambered. — Mountainous woods; common. The fruit is eaten in Northern Europe, and is used as a lure by fowlers, whence it derives one of its English

PYRUS MÁLUS (*Crab Apple*).

names and its specific name, from the Latin *auceps*, a fowler.—Fl. May, June. Perennial.

9. *P. commúnis* (Wild Pear).—A shrub or small tree, often bearing spines at the extremities of its branches; *leaves* simple, ovate, serrate; *flowers* an inch across, white, in corymbose cymes; *fruit* tapering at the base, 5-chambered, woody and worthless when wild; core horny.—Woods and hedges; uncommon. The origin of garden Pears.—Fl. April, May. Perennial.

10. *P. cordáta* (Lesser Pear) is a small form of bushy habit, with cordate *leaves* and more globose *fruit*, found near Plymouth.—Fl. May. Perennial.

✓ 11. *P. Málus* (Crab Apple).—A small spreading tree without spines; *leaves* simple, ovate, serrate; *flowers* white, delicately shaded with pink, in a sessile umbellate cyme; *styles* united below; *fruit* globose, with a hollow at the insertion of the stalk, yellow or reddened, intensely acid, 5-chambered.—Woods and hedges; common. Formerly used in making verjuice and pomatum, so called from *pomum*, an apple.—Fl. May. Perennial.

12.* *P. germánica* (Medlar).—A small, much-branched, spinous tree, with large, simple *leaves*, white *flowers*, 1½ in. across, on short stalks, and a remarkable globose *fruit*, with large, leafy, persistent *sepals* and 5 bony 1-seeded *carpels* exposed at the top.—Hedgerows; but probably not truly wild. Well known in a cultivated state.—Fl. May, June. Perennial.

13. Cratǽgus (Hawthorn).—Shrubs or small trees, often spinous; *leaves* simple, lobed; *stipules* deciduous; *flowers* in terminal corymbose cymes; *sepals* 5; *petals* 5; *stamens* many; *carpels* 1—5, enclosed in the calyx-tube, each 2-ovuled; *fruit* a pome with a bony core. (Name from the Greek *kratos*, strength, alluding to the

hardness of its wood, which is the best substitute for boxwood for engraving purposes.)

1. *C. Oxyacántha* (Hawthorn, Whitethorn, or

PYRUS GERMÁNICA (*Common Medlar*).

May).—A small, round-headed, much-branched, spinous tree, which, though it varies considerably in its mode of growth, shape of leaf, and colour of flower and fruit, is so well known as hardly to need description. Its *leaves* are deeply pinnatifid and appear before the blossoms; the *flowers* are generally white and heavily scented, the *anthers* pink with brown *pollen*, and the *fruit* usually sub-globose, scarlet, or crimson, of 1—3 carpels. The name Hawthorn is derived from *haeg*, a hedge; although, therefore, the fruit is generally called a *haw*, that name is derived from the tree which produces it, and the tree does not, as is frequently supposed, take its name from the fruit which it bears.—Fl. May. Perennial.

CRATÆGUS OXYACÁNTHA (*Hawthorn*).

14. COTONEÁSTER.—Shrubs or small trees; *stipules* deciduous; *flowers* solitary, or nearly so, small; *sepals* 5; *petals* 5; *stamens* many; *carpels* 2—5, adherent at their backs to the calyx-tube, but not co-

herent; *fruit* a 2—5-chambered pome with a bony core. (Name Classical).

1. *C. integérrimus.*—A small pubescent shrub, with roundish *leaves;* minute rose-pink *flowers*, few together; and small, pendulous, globose, shining red *fruits.*—Occurs on limestone rock at Great Orme's Head, Caernarvonshire.—Fl. May, June. Perennial.

ORD. XXVII. SAXIFRÁGEÆ.—THE SAXIFRAGE FAMILY.

Shrubs and herbs abounding in temperate and cold climates, but within the tropics confined to lofty mountains. They have polysymmetric and generally 5-merous *flowers; sepals* 5, rarely 4, united at the base and generally partly adherent to the carpels; *petals* equal in number and alternate to the sepals, imbricate, or rarely absent; *stamens* 4—10, perigynous; *carpels* usually 2, rarely 3—4, united below; *styles* usually distinct; *ovules* many; *fruit* of two follicles, a 1—2-chambered capsule, or a berry. Most members of the Order have slightly astringent properties, and some few are bitter and tonic. Several species of the genus *Ribes* have berries with an agreeable acid flavour; others are mawkish. The extensive genus *Saxífraga* contains many tufted mountain plants that contribute greatly to the beauty of alpine vegetation.

1. SAXÍFRAGA.—Herbs; *petals* 5; *stamens* 10, rarely 5; *ovary* 2-chambered; *styles* 2.

2. CHRYSOSPLÉNIUM.—Small succulent herbs; *petals* absent; *stamens* 8 or 10; *ovary* 1-chambered; *styles* 2.

3. PARNÁSSIA.—Herbs; *flowers* large, solitary; *petals* 5; *stamens* 5, with five alternating staminodes; *ovary* 1-chambered; stigmas 3 or 4.

4. RÍBES.—Shrubs; *petals* 4 or 5; *stamens* 4 or 5; *ovary* 1-chambered; *styles* 2; *fruit* a berry.

1. **Saxífraga** (Saxifrage).—Herbs, mostly perennial; *leaves* both radical and cauline, with sheathing *petioles; flowers* in cymes, white, yellow, or rarely purple or red; *sepals* 5, imbricate; *petals* 5; *stamens* 10, rarely 5; *carpels* 2, united below, forming a superior, or half-inferior, 2-chambered *ovary*, with parietal *placentation*, numerous *ovules*, and 2 *styles; fruit* of 2 follicles or united below into a capsule. (Name in Latin signifying *rock-breaker*, many of the species growing in crevices of rocks).

* *Flowers purple.*

1. *S. oppositifólia* (Purple Mountain Saxifrage).—A low-growing, tufted, glabrous plant, with trailing *stems;* small, opposite, and decussate fleshy *leaves;* and relatively large, solitary, bright purple *flowers.*—Alpine rocks in the north.—Fl. April, May. Perennial.

** *Flowers crowded, white.*

2. *S. nivális* (Clustered Alpine Saxifrage).—An alpine plant, 3—6 in. high; *leaves* all radical, obovate, crenate, thick, red beneath; *flowers* rather large, white, 4—12 together, in a compact head.—High mountains in the north; rare.—Fl. July, August. Perennial.

*** *Flowers in loose cymes, white, with two coloured dots on each petal.*

3. *S. stelláris* (Starry Saxifrage).—A mountain plant, 3—5 in. high; *leaves* in a rosette, scarcely stalked, oblong, wedge-shaped, coarsely toothed; *flowers* rather large, few, white, with two yellow spots on each petal.—By mountain rivulets in the north.—Fl. June, July. Perennial.

4. *S. Géum* (Kidney-shaped Saxifrage), with reni-

form, tufted, leathery, toothed *leaves* and small white *flowers* dotted with pink ;

5. *S. hirsúta*, more hairy, with oval *leaves ;* and

6. *S. umbrósa* (St. Patrick's Cabbage, London Pride, or None-so-pretty), with obovate *leaves*, are closely allied, rare species, occurring on mountains in the West and South-west of Ireland. The last is a well-known garden plant, making itself at home even in the smoky gardens of London, and occurs in many places as a naturalised escape.—Fl. June. Perennial.

**** *Flowers yellow.*

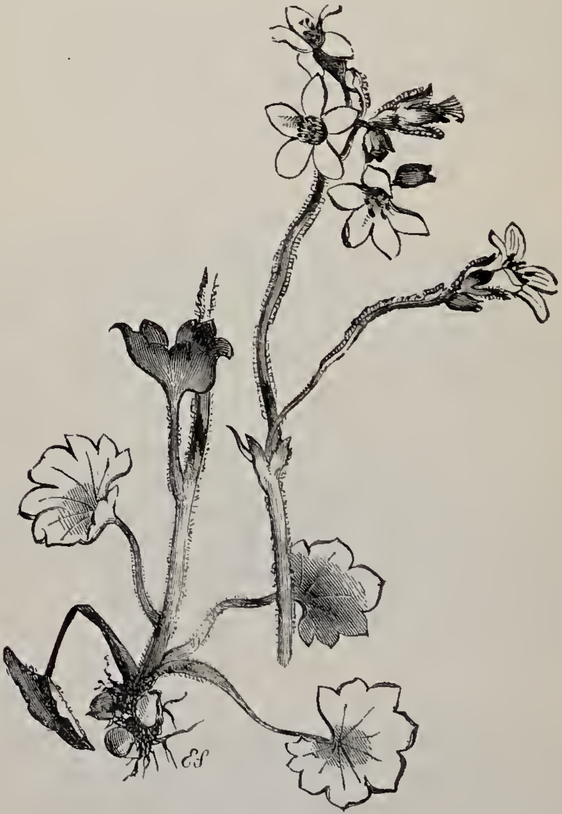
7. *S. Hírculus* (Yellow Marsh Saxifrage).—A handsome species, about 6 in. high, with runners ; *stem* erect, branched, leafy, downy above ; *radical leaves* in a rosette, lanceolate ; *cauline leaves* linear ; *flowers* large, solitary, or nearly so, yellow, spotted with scarlet.—Wet moors ; rare.—Fl. August. Perennial.

8. *S. aizóïdes* (Yellow Mountain Saxifrage).—A smaller, more tufted, prostrate and branched species; *leaves* very narrow, fleshy, fringed ; *flowers* like those of the preceding, but smaller. Wet places in the mountains in the north and in Ireland. Fl. June—September. Perennial.

***** *Leaves broad, palmately-lobed ; flowers white.*

9. *S. tridactylítes* (Three-fingered Saxifrage).—A small, very hairy, and viscid species with glandular hairs, rarely more than 3 in. high, usually tinged with red, branched ; *leaves* palmately 3—5-lobed, segments linear-oblong ; *flowers* minute, numerous, scattered.—On walls and dry places ; common. Generally covered with dead flies, though there is in its case no evidence that they are digested or assimilated.—Fl. April—July. Annual.

10. *S. rivuláris* (Alpine Brook Saxifrage).—A small, tufted, slender, succulent, slightly glandular, prostrate species; *leaves* reniform, palmately 5-lobed, on slender stalks; *flowers* 1—3 together, small, white.



SAXÍFRAGA GRANULÁTA (*White Meadow Saxifrage*).

—By streams near the summits of Highland mountains; rare.—Fl. July, August. Perennial.

11. *S. cérnua* (Drooping Bulbous Saxifrage).—A small, erect, unbranched species, with scaly bulbs in

the axils of its stalked, reniform, palmately-lobed *leaves* and a solitary, drooping *flower*, which in Scotland is generally replaced by a reddish bulbil.—Occurs only on the summit of Ben Lawers.—Fl. June—August. Perennial.

12. *S. granuláta* (White Meadow Saxifrage).—A pretty plant, closely allied to the preceding; *stems* slender, leafy, 10—12 in. high, with numerous brown, downy, bulb-like tubers, as big as peas, at their base; *radical leaves* stalked, reniform, palmately-lobed; *cauline leaves* sessile, more deeply cut into more acute segments; *flowers* in a loose cluster, 1 in. across, inclined, pure white.—Gravelly banks and meadows; not uncommon. A double variety is grown in gardens.—Fl. April—June. Perennial.

****** *Tufted plants with leaves palmately cut into narrow segments; flowers white.*

13. *S. cæspitósa* (Tufted Alpine Saxifrage), distinguished by the obtuse lobes of its *leaves*, with few small, crowded *flowers*, occurs very rarely on alpine summits, forming bright green cushions.—Fl. May—August. Perennial.

14. *S. Sternbérgii*, a very hairy glandular species, with 3—4-lobed *leaves*, the lobes lanceolate, acute, fringed, occurs on alpine rocks in the South-west of Ireland.—Fl. July. Perennial.

15. *S. decípiens*, a closely-allied form, with 3—7-lobed leaves, the lobes abruptly acuminate, occurs in North Wales.

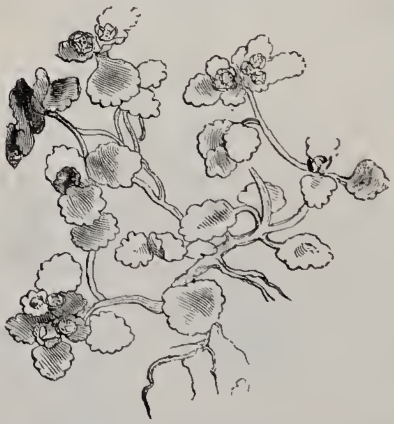
16. *S. grœnlándica*, another closely-allied form, 1—2 in. high, densely tufted, with few *cauline leaves; leaves* broadly wedge-shaped, palmately 3—5-fid, with ovate-lanceolate acute lobes, and few *flowers*, has been recorded from Ben Lawers.

17. *S. hírta* (Hairy Saxifrage), with 3—5-lobed *leaves*, very finely cut into bristle-pointed lobes and

flowers 2—4 together, with subulate *sepals* and oblong 3-veined *petals*, the sides of which are inflexed, occurs on the Galtee Mountains.—Fl. July. Perennial.

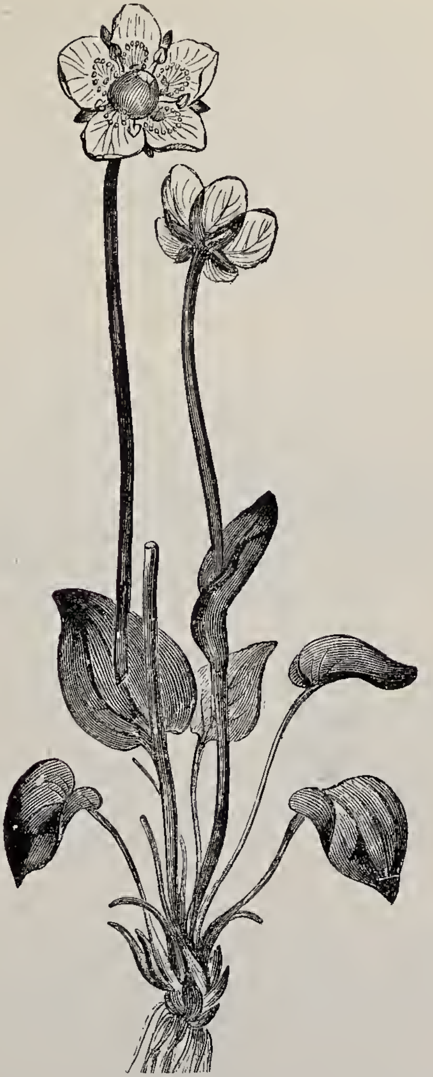
18. *S. hypnöïdes* (Mossy Saxifrage).—With trailing barren shoots and erect flowering ones; *leaves* mostly 3-cleft, bristle-pointed, with narrow, fringed segments and narrow triangular acute *sepals.*—Occurs somewhat frequently in mountainous districts, and is often grown in gardens.—Fl. May—July. Perennial.

2. Chrysosplénium (Golden Saxifrage).—Small succulent herbs; *leaves* exstipulate; *flowers* minute, green or yellow, apetalous; *sepals* 4—5, obtuse, imbricate; *stamens* 8—10, epigynous; *ovary* inferior, 1-chambered; *styles* 2; *ovules* many, parietal; *fruit* a capsule. (Name from the Greek *chrúsos*, golden, and *splēn*, the spleen, probably from some supposed medicinal virtues.)



CHRYSOSPLÉNIUM OPPOSITIFÓLIUM (*Common Golden Saxifrage*).

1. *C. oppositifólium* (Common Golden Saxifrage).—A small aquatic plant about 2—6 in. high, with



PARNÁSSIA PALÚSTRIS (*Common Grass of Parnassus*).

a creeping *stem*, rooting below; *leaves* bright green, opposite, orbicular; *flowers* minute, 4-merous, yellowish-green, in flat terminal clusters.—Damp shady places; common.—Fl. April—July. Perennial.

2. *C. alternifólium* (Alternate-leaved Golden Saxifrage).—A very similar plant with an erect *stem*, alternate, reniform *leaves* and deeper yellow *flowers*, grows in similar situations, but is less common. These little plants sometimes form a true peat.—Fl. April—June. Perennial.

3. Parnássia (Grass of Parnassus).—Glabrous herbs, with radical, exstipulate, entire *leaves* and large solitary *flowers* on slender, erect peduncles; *sepals* 5, imbricate, persistent; *petals* 5, thick; *stamens* 5, alternating with 5 staminodes; *ovary* superior, 1-chambered; *ovules* many, parietal; *stigmas* 3—4, sub-sessile; *fruit* a capsule. (Named, from its beauty, after Mount Parnassus, the home of the Muses.)

1. *P. palústris* (Common Grass of Parnassus).—An exquisitely beautiful plant; *leaves* ovate-cordate, long-stalked; *flowers* 1 in. across, ivory-white, beautifully veined, on peduncles 8—10 in. high; *staminodes*, fan-shaped scales, fringed with 9—13 white hairs terminating in yellow wax-like glands.—Bogs, principally in the north.—Fl. August, September. Perennial.

4. Ríbes (Currant and Gooseberry).—Shrubs, sometimes spinous; *leaves* scattered, lobed, plaited; *flowers* solitary or in bracteate racemes; *sepals* 4 or 5, superior; *petals* and *stamens* equal to the sepals in number; *ovary* inferior, 1-chambered; *styles* 2; *fruit* a berry; *seeds* with a pulpy testa. (Name Arabic, applied originally to the Rhubarb.)

1.* *R. Grossulária* (Gooseberry), well distinguished by its spines below the leaf-buds, either single or 2—3 together; *leaves* plaited, 3—5 lobed, crenate; *flowers* 1—3 together, greenish, drooping; *sepals* marcescent; *petals* minute, white; *fruit* glandular-hairy or glabrous.—Hedges and woods, an escape. The variety *Uva-críspa*, with smooth berries, may be wild.—Fl. April, May. Perennial.

2. *R. alpínum* (Tasteless Mountain Currant).—

RÍBES NÍGRUM (*Black Currant*).

Without spines and almost glabrous; with diœcious yellowish *flowers* in erect racemes, very long lanceolate *bracts*, and scarlet, insipid berries.—Mountainous woods in the north; rare.—Fl. April, May. Perennial.

3. *R. rúbrum* (Red Currant).—Without spines; *leaves* bluntly 5-lobed; *racemes* pendulous or erect, glabrous or downy; *bracts* short, ovate.—Truly wild

in woods in the north. The origin of the Red and White Currants of our gardens.—Fl. April, May. Perennial.

4. *R. nígrum* (Black Currant).—Without spines; *leaves* acutely 3—5-lobed, dotted with glands beneath; *flowers* in downy pendulous racemes, with a separate single-stalked flower at the base of each; *calyx* downy; *berry* black.—Damp woods; occasionally wild. Easily distinguished, at all seasons, by the strong perfume of its buds and leaves.—Fl. April, May. Perennial.

ORD. XXVIII. CRASSULÁCEÆ.—THE STONECROP FAMILY.

Herbs or shrubs, remarkable for their thick, fleshy, simple *leaves* and generally succulent habit, and for their star-like polysymmetric *flowers*, inhabiting most parts of the world, especially South Africa, and growing in the driest situations, where not a blade of grass can live, on naked rocks, old walls, or hot sandy plains alternately exposed to the heaviest dews of night and the fiercest rays of the noonday sun. They have the power of laying in during the rainy season a large store of moisture, which they obstinately retain, requiring no further nourishment, save what they derive from the atmosphere. A common British species, *Sédum Teléphium*, Orpine or Livelong, will grow for months, if suspended by a string from the ceiling of a room, without being once supplied with water. An African species, *Bryophýllum calycínum*, will not only grow if similarly treated, but if its leaves be gathered, they will send out young shoots or offsets from the notches on their margin. Herbarium specimens of members of this Order had better be plunged for a short time in boiling water before being pressed or they will continue to grow. *Sepals* 3—20, more or less united at the base; *petals* equal in number to the sepals, perigynous; *stamens* the same, or twice as many in two whorls, those of the inner whorl shorter; *ovaries* as many as the petals, 1-chambered, free; *fruit* a ring of follicles; *seeds* in a double row. One or two species are used in medicine, their roots being astringent. The leaves are generally acrid, containing malic or tartaric acid.

1. TILLǼA.—*Leaves* opposite; *sepals, petals, stamens,* and *carpels* 3—5 each; *follicles* 2-seeded.

2. COTYLÉDON.—*Leaves* scattered; *sepals, petals,* and *carpels* 5 each; *petals* united; *stamens* 10.

3. SÉDUM.—*Sepals, petals,* and *carpels* 4—6 each; *petals* free; *stamens* 8—12.

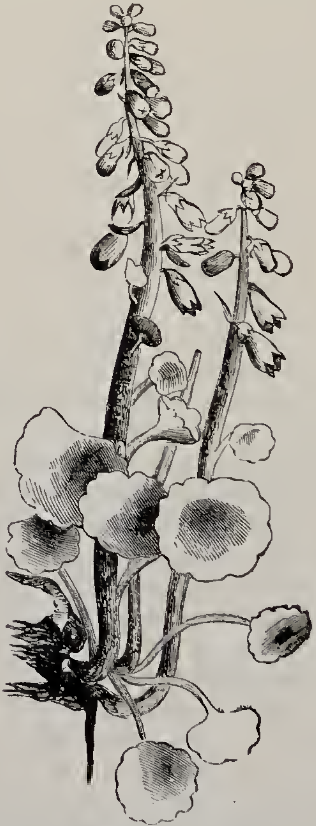
*4. SEMPERVÍVUM.—*Leaves* scattered; *sepals, petals,* and *carpels* 6—20; *stamens* 12—40.

1. TILLǼA.—Small herbs; *leaves* opposite, entire; *flowers* minute; *sepals,* and sometimes the *petals,* united below; *sepals, petals, stamens,* and *carpels* 3—5 each; *follicles* 2 or more seeded. (Named after Michael Angelo Tilli, an Italian botanist.)

1. *T. muscósa* (Mossy Tillæa).—A minute, tufted, prostrate, smooth plant with small, opposite, oblong, blunt *leaves* and solitary, subsessile, 3-merous, or rarely 4-merous, greenish white *flowers,* tipped with red.—On sandy heaths in the south and east. It has somewhat of the habit of a *Sagína,* from which, however, it is very distinct.—Fl. June, July. Annual

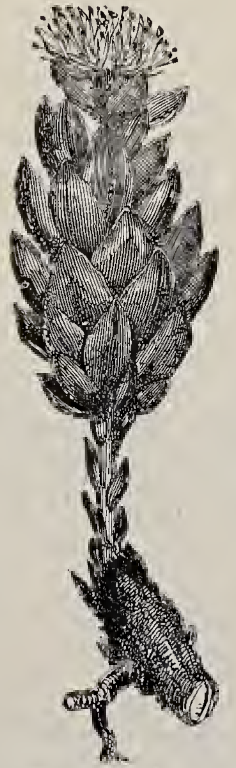
2. COTYLÉDON (Pennywort).—Mostly succulent herbs with scattered, peltate *leaves*; *flowers* in terminal spikes or racemes, 5-merous; *petals* united; *stamens* in 2 whorls; *carpels* each with a hypogynous scale at its base; *styles* slender, *follicles* many-seeded. (Name from the Greek *kótulé,* a dish, from the shape of the leaves.)

1. *C. Umbílicus* (Wall Pennywort).—A remarkably succulent, glabrous plant, with orbicular, crenate, peltate *leaves*, depressed in the centre ; and terminal racemes 6—18 in. high, of short-stalked, pendulous, greenish-yellow *flowers*.—Walls and rocks, chiefly in the west. The plant often takes a pink tinge in fading, and the leaves are well-known to children by the name of "penny pies."—Fl. June—August. Perennial.



COTYLÉDON UMBÍLICUS (*Wall Pennywort*).

3. Sédum (Stonecrop).—Succulent herbs; *flowers* usually cymose, 5-merous, rarely 4-merous; *petals* free; *stamens* in 2 whorls; *hypogynous scales* entire or notched. (Name from the Latin *sédeo*, I sit, from the prostrate habit of the genus.)


SÉDUM RÓSEUM (*Rose-root*).

* *With a thick rhizome; leaves broad and flat.*

1. *S. róseum* (Rose-root).—*Rhizome* 2—3 in. long, branched, woody, having the scent of rose-water;

stems 6—10 in. high, annual, unbranched; *leaves* broad, glaucous, acute; *flowers* in compact terminal cymes, greenish-yellow, 4-merous, diœcious.—On mountains in the north and in Ireland, and on sea-cliffs; not common.—Fl. May—August. Perennial.

2. *S. Teléphium* (Orpine, or Livelong).—The largest British species, growing about 2 feet high, and well distinguished by its large, broad, ovate, serrate *leaves* and terminal dense corymbose cymes of crimson 5-merous *flowers*.—Rocky thickets; not uncommon, but often an escape from gardens.—Fl. July, August. Perennial.

** *Leaves nearly cylindric; flowers white.*

3. *S. villósum* (Hairy Stonecrop).—A small species with hairy, viscid *stems* and *leaves*; and pinkish white *flowers*, few together.—Wet mountain pastures in the north.—Fl. June, July. Biennial.

4. *S. álbum* (White Stonecrop).—A glabrous species with prostrate barren stems and erect reddish flowering *stems* 6—10 in. high; *leaves* sub-cylindric, blunt, $\frac{1}{2}$ in. long, bright green; *flowers* white, in many-flowered corymbose cymes.—Rocks and walls; not common.—Fl. July, August. Perennial.

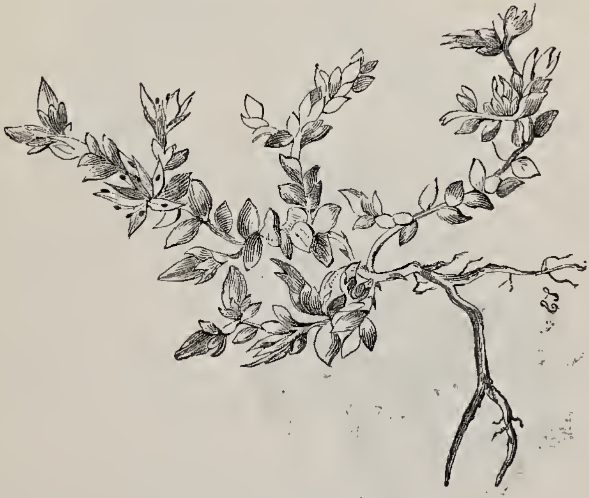
5.* *S. dăsy̆phýllum* (Thick-leaved Stonecrop).—A small, very glaucous, pink-tinged, slightly viscid, and prostrate species with fleshy, almost globular *leaves*, and white *flowers*, often streaked with pink.—Occurs as an escape on old walls.—Fl. June, July. Perennial.

6. *S. ánglicum* (English Stonecrop).—A small plant 3—4 in. high, with *stems* prostrate, ascending; *leaves* small, scattered, crowded, fleshy, spurred at the base beneath, pale green or tinged with red; *flowers* star-like, white, spotted with red, in two-forked cymes; *petals* very sharply pointed; *anthers* bright red.—Rocky and sandy places, especially near the sea.—Fl. June—August. Annual.

**** Leaves nearly cylindric ; flowers yellow.*

7. *S. ácré* (Biting Stonecrop, Wall-pepper).—Very like the preceding in habit and growing in similar situations; but distinguished by its thicker, more crowded, and intensely acrid *leaves* and golden-yellow *flowers* in 3-cleft cymes.—Wall, rocks, and sandy ground ; common.—Fl. June, July. Perennial.

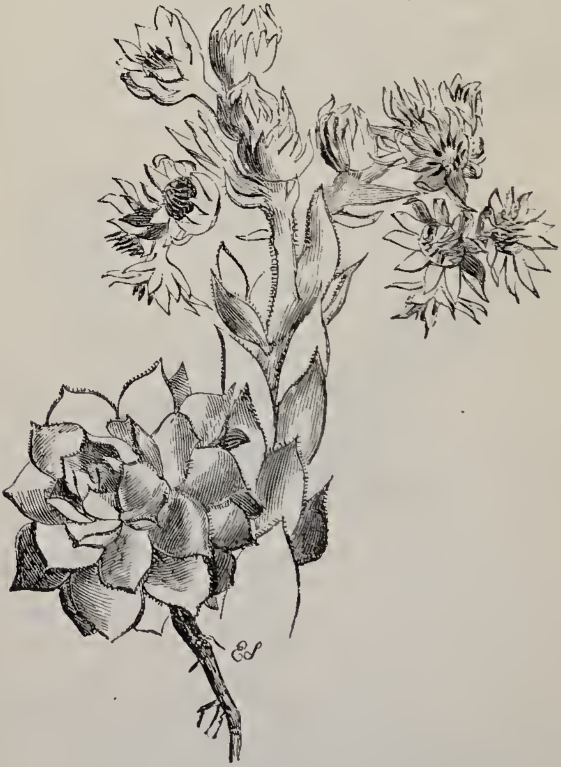
8.* *S. sexanguláré* (Tasteless Yellow Stonecrop), distinguished from the preceding by its crowded *leaves* more distinctly in 6 vertical rows, and by its acute *sepals*, occurs on old walls, chiefly in Kent, but is not indigenous.—Fl. July. Perennial.



SÉDUM ÁCRÉ (*Biting Stonecrop*).

9.* *S. refléxum* (Recurved Yellow Stonecrop).—Easily distinguished from any of the preceding by its slender but tough *stems*, 6—10 in. high, with spreading, or reflexed, awl-shaped, pointed, and sometimes glaucous *leaves ; flowers* often 6-merous, bright or pale yellow.—Walls and dry banks ; not uncommon, but seldom, if ever, indigenous.—Fl. July, August. Perennial.

10. *S. rupéstré* (Rock Stonecrop), an allied species, with densely imbricated, adpressed, glaucous *leaves*, slightly flattened, and *flowers* in corymbose cymes, occurs wild on limestone at St. Vincent's Rocks, Bristol; Cheddar; and the Great Orme's Head; and elsewhere generally as an escape.—Fl. June, July. Perennial.



SEMPERVÍVUM TECTÓRUM (*Common House-leek*).

11. *S. Forsteriánum* (Welsh Stonecrop), a species very closely allied to the preceding, but with bright green, not glaucous *leaves* and *flowers* in round-topped or capitate cymes, grows on wet rocks in Wales, Shropshire, and Somerset.—Fl. June, July. Perennial.

*4. SEMPERVÍVUM (House-leek).—Succulent plants with dense rosettes of sessile radical *leaves*, giving off offsets from their axils; *flowers* in branched cymes, 6—20-merous; *stamens* in 2 whorls, the inner usually barren; *hypogynous scales* fringed; *follicles* many-seeded. (Name from the Latin *semper*, always, *vivo*, I live.)

1.* *S. tectórum* (Common House-leek).—A common but scarcely indigenous plant, growing on the roofs of cottages and outhouses. The *leaves* are thick and juicy, edged with red-purple, ciliate, mucronate, and in compact rosettes. The dull red-purple *flowers* are in scorpioid cymes, and are usually 12-merous. The inner whorl of *stamens* frequently have anthers containing *ovules*, like those in the carpels, which, however, never mature as seeds. The leaves contain malic acid.—Fl. June, July. Perennial.

ORD. XXIX. DROSERÁCEÆ.—THE SUNDEW FAMILY.

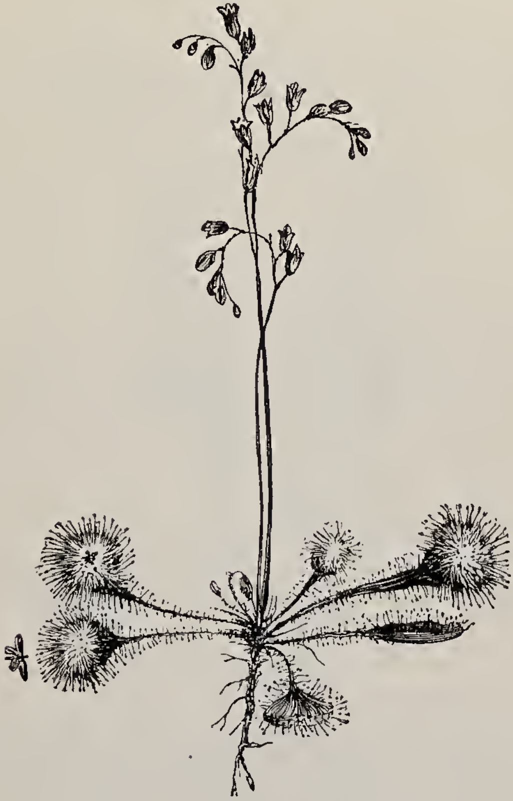
An interesting group of herbaceous marsh plants widely dispersed over the globe, but specially common in Australia. They will grow on wet sand or moss, depending only for water on the substratum, and their *roots* are accordingly small. Their chlorophyll is often little developed, the whole plant being reddish, and the *leaves* in several genera covered with insectivorous glandular hairs. The *flowers* are polysymmetric and usually 5-merous, the *sepals* and *petals* being imbricate, the *stamens* in 1—4 whorls, the *carpels* sometimes reduced in number, with distinct *styles*, and forming a 1—5-chambered, many-seeded *capsule*. In *Drósera*, the largest genus and the only one represented in Britain, the leaves have many-pointed lobes or *tentacles*, each ending in a gland exuding a viscid fluid, especially when the sun is shining, so that they appear as if tipped with dew, whence the various names of these plants. These tentacles are at first spreading and the fluid neutral; but on capturing a small fly, or on contact with any nitrogenous substance, the fluid becomes acid and the tentacles bend towards the centre of the leaf, where the fly is digested. *Dionǽa muscípula* (Venus' Fly-trap), a native of Carolina, has non-glandular tentacles round the margin of the leaf and a few long hairs on its upper surface. When these hairs are touched by an insect the two halves of the leaf close together instantaneously by an electrical action, the tentacles interlocking like the teeth of a gin, and an acid digestive fluid is then exuded by glands on the surface of the leaf. It has been experimentally demonstrated that the Sundews benefit by the animal food thus obtained.

1. DRÓSERA (Sundew). — *Stipules* membranous, adnate to the petiole; *flowers* in 1-sided sympodial cymes, curled up circinately when in bud; *sepals*, *petals*, and *stamens* 5 each; *styles* 2—5, deeply 2-fid; *capsule* 1-chambered, 2—5-valved. (Name from the Greek *drósera*, dewy.)

1. *D. rotundifólia* (Round-leaved Sundew).—An exceedingly curious little bog plant, 2—6 in. high; *leaves* all radical, petiolate, spreading horizontally, round, with tentacles on the petiole, upper surface, and margin; *flowers* on a slender, wiry, leafless scape, small, white, cleistogene, or opening very

rarely in sunny weather.—Spongy bogs and heaths; common.—Fl. July, August. Perennial.

2. *D. ánglica* (Great Sundew).—A larger, stouter species; *leaves* all radical, on very long stalks, which are destitute of tentacles, erect or nearly so, obovate. —In similar situations to the last, but much less frequent.—Fl. July, August. Perennial.



DRÓSERA ROTUNDIFÓLIA (*Round-leaved Sundew*).

3. *D. intermédia* (Long-leaved Sundew).—Very similar to the last, but smaller; *leaves* spathulate, not

more than 2 in. long; *peduncles* curved at the base.—Occurring with *D. rotundifólia*, but less frequent.—Fl. July, August. Perennial.

ORD. XXX. LYTHRARIÉÆ.—THE LOOSESTRIFE FAMILY.

Herbs, shrubs, or trees, with 4-angled *branches;* simple, entire, exstipulate, and generally opposite *leaves*, and usually polysymmetric *flowers;* *sepals* and *petals* 3—6 each; *stamens* equalling the petals in number, or 2—4 times as many; *carpels* 2—6; *fruit* a many-seeded capsule, covered by the calyx, but not united to it.—Most members of the Order are tropical, and many of them possess astringent properties which are utilised in dyeing. *Lawsonia inérmis* is the Henna of Egypt, which has been used for ages by the people of that country to stain their nails of an orange colour. It is also used to dye Morocco leather a reddish-yellow.

1. PÉPLIS.—*Calyx* bell-shaped, with 12 divisions, alternately smaller; *petals* 6, minute, fugacious or absent; *stamens* 6 or 12; *style* very short.

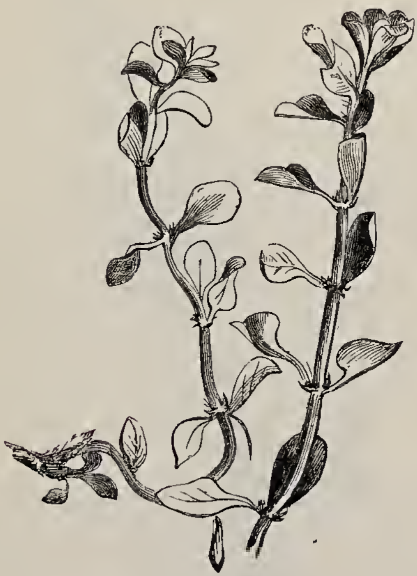
2. LÝTHRUM.—*Calyx* cylindric, with 12 divisions, alternately smaller; *petals* 6; *stamens* 6 or 12; *style* long.

1. PÉPLIS (Water Purslane).—Small, weak, annual herbs; *flowers* minute, axillary; *calyx* campanulate, 12-lobed, the alternate lobes smaller; *petals*, perigynous, fugacious or absent; *stamens* 6 or 12; *style* short; *capsule* 2-chambered, 2-valved, many-seeded. (Name from the Greek *peplion*, purslane, not originally referring to this genus.)

1. *P. Pórtula* (Water Purslane).—A humble, glabrous, creeping, aquatic plant, with 4-angled *stems;* opposite, obovate, obtuse *leaves;* and inconspicuous,

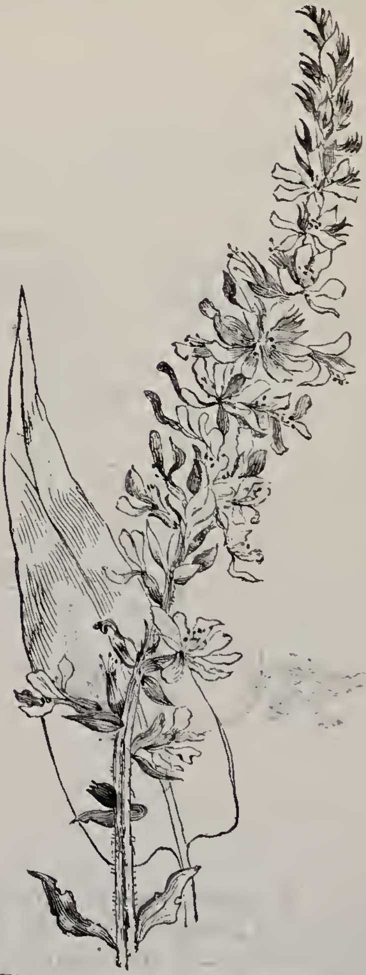
solitary, axillary *flowers.*—Wet places; common. The plant is usually tinged with red, especially when the ground in which it grows dries up. — Fl. July August. Annual.

2. LÝTHRUM (Purple Loosestrife).—Herbs or shrubs with 4-angled *branches ;* entire *leaves ; flowers* in spikes of axillary 1- or more-flowered cymes; *calyx-tube* cylindric, with 8—12 ribs and teeth, the alternate teeth smaller; *petals* 4—6, or absent; *stamens* 8—12 in 1 or 2 whorls, often lying to one side; *ovary* superior, 2-chambered; *style* long, thread-like; *capsule* very many-seeded. (Name from the Greek *luthron*, gore, from the colour of the flowers.)



PÉPLIS PÓRTULA (*Water Purslane*).

1. *L. Salicária* (Purple Loosestrife).—An exceedingly handsome plant, 2—4 feet high; *rhizome*



LÝTHRUM SALICÁRIA (*Purple Loosestrife*).

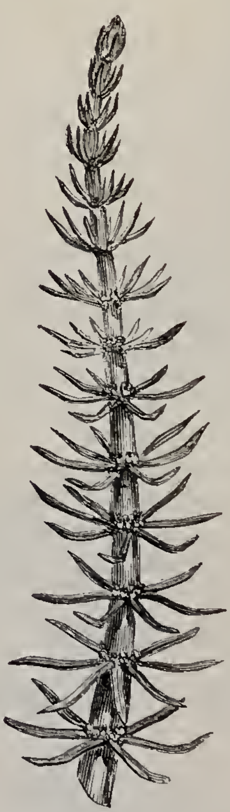
creeping; *stem* 4—6-angled or winged; *leaves* opposite, or in whorls of 3—4, decussate, lanceolate, cordate, acute; *flowers* in tall, tapering, leafy spikes of axillary glomerules or sessile cymes, about 1 in. across, red; *calyx-tube* 12-ribbed; *petals* wrinkled; *stamens* 12 in 2 whorls, both differing in length from the style; *style* in some plants longer than all the stamens, in others shorter than all of them, and in others intermediate between the two whorls.—River banks and ditches; common. Growing among sedges and rushes, its flower-spikes might, at a distance, be mistaken for Foxgloves, which, however, would scarcely grow in such a situation. The trimorphism of the flowers is connected with cross-pollination by insects, Darwin having shown that the pollen from any of the stamens most readily fertilises the stigma of a style of the same length, one, that is, on another plant. Long-styled, medium-styled, and short-styled plants grow together, and are equally numerous.—Fl. July—September. Perennial.

2. *L. Hyssopifólia* (Hyssop-leaved Purple Loosestrife) is a much smaller, mostly prostrate, glabrous plant, 6—18 in. high, with alternate narrow *leaves*; small, pink *flowers* solitary in the axils; and 6 *stamens.*—It grows in moist, often inundated, places; but is rare.—Fl. June—October. Annual.

§§ *Stamens* epigynous; *ovary* syncarpous, inferior.

ORD. XXXI. HALORÁGEÆ.—THE MARE'S-TAIL FAMILY.

A small Order, comprising about 80 species of plants, mostly herbaceous aquatics, with exstipulate *leaves*, generally whorled; and inconspicuous *flowers*, often destitute of *petals*, and in several species having the *stamens* and *carpels* in separate flowers. The *calyx* is generally superior, adhering to the ovary and having sometimes 2 or 4 *sepals*; *petals* 2 to 4, or absent; *stamens* 1—8; *carpels* 1—4; *capsule* 1—4-chambered, indehiscent; *seeds* solitary in each chamber, pendulous. No member of this Order has any important use or known properties.



HIPPÚRIS VULGÁRIS (*Common Mare's-tail*).

1. Hippúris.—*Leaves* whorled, entire; *sepals* 2, superior; *petals* absent; *stamen* 1; *carpel* 1.

2. Myriophýllum.—*Leaves* mostly whorled, pinnate; *sepals* 4, superior; *petals* 4, or absent; *stamens*

2, 4, or 8, often in separate flowers from the carpels, but on the same plant (monœcious); *carpels* 4.

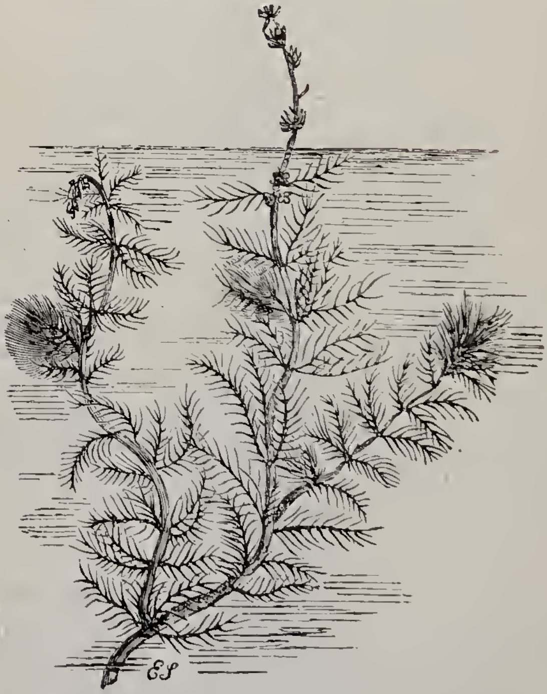
3. CALLITRÍCHÉ. — *Leaves* opposite, entire; *sepals* and *petals* absent; *stamen* 1; *carpels* 4 (monœcious).

1. HIPPÚRIS (Mare's-tail). — Glabrous, aquatic herbs, with erect, unbranched, leafy *stems;* whorled, narrow, entire *leaves;* minute, axillary, solitary *flowers; calyx* forming a minute, indistinctly 2-lobed rim to the ovary; *petals* absent; *stamen* 1; *carpel* 1, 1-seeded; *fruit* nut-like, indehiscent. (Name from the Greek *hippos*, a horse, *oura*, a tail.)

1. *H. vulgáris* (Common Mare's-tail).—The only British species, a singular plant, with erect, unbranched, jointed *stems*, tapering to a point, bearing whorls of 6—10 narrow *leaves* with hard tips, and inconspicuous *flowers* sessile in the axils of the upper leaves, and often without stamens.—Not uncommon in stagnant water. Not to be confounded with the genus *Equisétum* (Horse-tail), a plant allied to the Ferns, which also has a jointed stem and whorled, rigid leaves, but bears its fructification in terminal cones.—Fl. June—July. Perennial.

2. MYRIOPHÝLLUM (Water Milfoil).—Glabrous, submerged plants; *leaves* mostly whorled and pinnately divided into numerous hair-like segments; *flowers* small, solitary or in spikes, the lower often apetalous and pistillate, intermediate ones perfect, and the upper staminate, so that the inflorescence is polygamous; *sepals* 4, rarely 2, united, superior; *petals* 4, 2, or absent; *stamens* generally 8, rarely 2 or 4; *carpels* 4, with feathery styles; *fruit* dividing into 4 nut-like, indehiscent, one-seeded cocci. (Name from the Greek *murios*, countless, *phullon*, a leaf, from its much-divided leaves.

1. *M. verticillátum* (Whorled Water Milfoil).—*Rhizome* creeping; *stems* floating, leafy; with short internodes; *leaves* with distant hair-like segments, collapsing when removed from the water; *flowers* white, in whorls of about 5 each, forming an elongated erect spike; *bracts* pinnatifid, longer than the flowers, the upper ones without flowers in their axils.—Stagnant water; not common. The whole plant is submerged with the exception of the spikes of inconspicuous flowers, which rise a few inches above the surface.—Fl. July, August. Perennial.

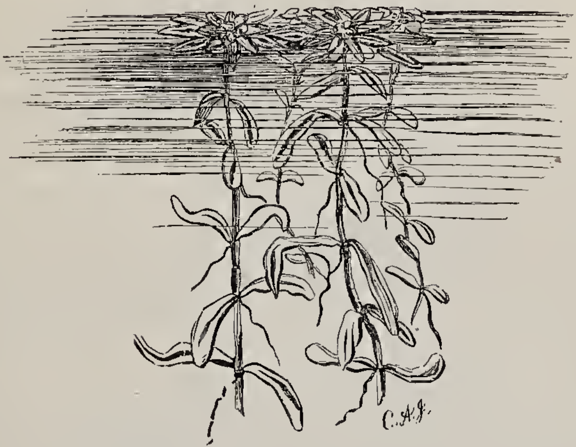


MYRIOPHÝLLUM SPICÁTUM (*Spiked Water Milfoil*).

2. *M. spicátum* (Spiked Water Milfoil).—A very

similar plant, with *leaves* 4 in a whorl and very small *bracts*, of which only the lower are pinnate, so that the whorls of *flowers* form a slender, erect, and apparently leafless spike.—More common than the preceding.—Fl. June—August. Perennial

3. *M. alterniflórum* (Alternate-flowered Water Milfoil).—Another similar plant, but more slender; *leaves* 3 or 4 in a whorl; *bracts* at the base of the spike in whorls of 3 or 4, pinnate, longer than the axillary pistillate *flowers*; those higher up opposite or alternate, entire or serrate, shorter than the staminate flowers, which thus appear to form a leafless spike which is nodding when in bud. The most frequent species.—Fl. May—August. Perennial.



CALLÍTRICHÉ VÉRNA (*Vernal Water Starwort*).

3. CALLÍTRICHÉ (Water Starwort).—Slender, submerged, aquatic plants; *leaves* exstipulate, opposite, simple, entire, the upper ones sometimes floating and often forming a rosette; *flowers* axillary, solitary,

minute, monœcious, without calyx or corolla, but usually with 2 white *bracts* beneath, consisting either of one *stamen*, or very rarely two, with a slender *filament* and a one-chambered *anther* dehiscing transversely, or of a 4-angled, 4-chambered *ovary*, with 2 slender *styles ; fruit* of 4 winged, 1-seeded, indehiscent cocci. (Name from the Greek *kalos*, beautiful, *thrix*, hair.)

1. *C. vérna* (Spring Water Starwort).—*Stems* long, slender, sending out long thread-like silvery roots from the joints; the upper *leaves* ovate-spathulate, floating in a light-green star-like rosette, the stamens being the only parts of the plant actually above water ; *bracts* straight, deciduous ; *styles* erect ; *fruit* sessile, with carpels swollen and bluntly keeled at the back.—Ponds and slow streams; common.—Fl. April—October. Annual or perennial.

2. *C. stagnális* (Mud Water Starwort).—A terrestrial form, with the upper *leaves* broad roundish, in a close rosette, or absent ; *bracts* sickle-shaped, persistent ; *styles* erect in flower, reflexed in fruit ; *carpels* flattish, winged.—Chiefly on mud ; common.—Fl. May—September. Annual or perennial.

3. *C. polymórpha*, as yet only recognised in a few localities, is similar, its *bracts* being persistent ; but has *stigmas* 2—4 times as long as the ripe fruit, and *carpels* scarcely winged.

4. *C. hamuláta*, usually very small ; *leaves* mostly linear ; *bracts* sickle-shaped, deciduous ; *styles* long, diverging ; *carpels* flattish with a blunt keel.—Marshes, lakes, and streams.—Fl. June—September. Annual or perennial.

5. *C. obtusángula* has obovate *leaves* in a rosette ; persistent *bracts* and *styles ;* and unkeeled *carpels.*—Ditches ; apparently not common.—Fl. May—September. Annual or perennial.

6. *C. autumnális* (Autumn Water Starwort).—*Leaves* all submerged, linear, obtuse, dark green ;

bracts absent; *styles* spreading; *fruit* large, dark brown; *carpels* with a broad wing.—Lakes; rare.—Fl. June—October. Annual or perennial.

7. *C. truncáta*, differing in having lighter, more translucent *leaves* and bluntly keeled *carpels*, has only been observed in a few localities.

ORD. XXXII. ONAGRARIÉÆ.—THE WILLOW-HERB FAMILY.

Herbs, or rarely shrubs or trees, principally inhabiting the temperate parts of the globe, with simple, exstipulate *leaves*, and generally conspicuous, polysymmetric *flowers*, mostly 4-merous; *sepals* 4 or 2, valvate; *petals* 4 or 2, contorted in the bud, or absent; *stamens* 2—8; *ovary* 1—6-chambered, usually 4-chambered; *fruit* a berry, or 4-chambered capsule. To this Order belongs the beautiful genus *Fuchsia*, with its coloured 4-cleft calyx and edible but insipid berries, natives of Mexico, Peru, Chili, and New Zealand. Many species of *Œnothéra*, natives of America, with the exception of one Tasmanian species, are cultivated as garden plants, some bearing flowers 3 or 4 inches in diameter. Those with yellow or white flowers, which open in the evening, are called Evening Primroses. No member of the Order has any known properties of importance.

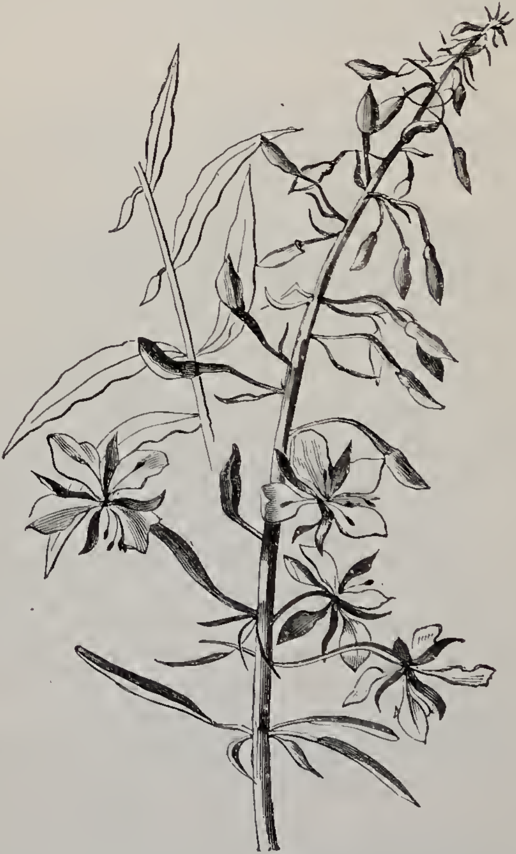
1. EPILÓBIUM.—*Sepals* 4; *calyx-tube* not prolonged above the ovary; *petals* 4, red, pink, or white; *stamens* 8.

2. LUDWÍGIA.—*Sepals* 3—5; *petals* 3—5; short, or absent; *stamens* 3—5.

*3. ŒNOTHÉRA.—*Sepals* 4; *calyx-tube* prolonged above the top of the ovary; *petals* 4, yellow, white, or red; *stamens* 8.

4. CIRCÆA.—*Sepals* 2; *petals* 2, white; *stamens* 2.

1. **Epilóbium** (Willow-herb).—Herbs or undershrubs with runners; *flowers* red or pink, rarely white or yellow; *sepals* 4, deciduous, springing direct from the top of the ovary; *petals* 4, usually 2-lobed; *stamens* 8, in two whorls, differing in length; *style* thread-like; *capsule* very long and slender, 4-cham-



EPILÓBIUM ANGUSTIFÓLIUM (*Rose-bay, or French Willow*).

bered and 4-valved; *seeds* numerous, tufted with down. (Name from the Greek *epi*, upon, *lobos*, a pod, the corolla springing from the top of the long pod-like inferior ovary.)

* *Petals unequal in size; stamens bent downwards.*

1. *E. angustifólium* (Rose-bay or French Willow).—A handsome species, 2—6 feet high; *stem* erect, round, unbranched; *leaves* scattered, stalked, lanceolate, slightly toothed, glaucous beneath; *flowers* 1 in. across, rose-coloured, in a long, loose bracteate raceme; *capsule* 1—4 in. long.—Damp woods, frequent; but sometimes an escape from gardens. Caution should be used in admitting it into a small garden, as its rhizomes creep extensively, and are very difficult to eradicate.—Fl. July, August. Perennial.

** *Stem round; petals all equal; stamens erect; stigma 4-cleft.*

2. *E. hirsútum* (Great Willow Herb, Codlins and Cream).—A handsome downy species, 3—6 feet high, producing underground suckers; *leaves* opposite, oblong-lanceolate, clasping the stem, serrate; *flowers* nearly an inch across, deep rose-colour, fragrant; *petals* broad.—Wet places by ditches and rivers; common.—Fl. July, August. Perennial.

3. *E. parviflórum* (Small-flowered Hairy Willow-Herb).—*Stem* erect, 1—2 feet high, little branched, downy, producing runners in autumn; *leaves* mostly scattered, sessile, lanceolate, toothed, hairy; *buds* erect; *flowers* small, pink.—Damp places; common.—Fl. July, August. Perennial.

4. *E. montánum* (Broad Smooth-leaved Willow-Herb).—A small species, about a foot high; *stem* downy; *leaves* mostly opposite, ovate, acute, serrate,

glabrous or downy along the edges and veins only, the lower ones slightly stalked, sometimes in whorls of 3; *buds* drooping; *flowers* small, pink.—Dry places; common.—Fl. June—August. Perennial.

5. *E. lanceolátum* (Spear-leaved Willow-Herb).—A rather larger species, with an erect, branched, obscurely angled *stem*, pubescent with recurved hairs; *leaves* stalked, flaccid, mostly pendulous, oblong-lanceolate, toothed; *buds* drooping; *flowers* small, pink.—Stony places in the south; rare. Fl. July—September. Perennial.

*** *Stem more or less 2—4-angled; petals all equal; stamens erect; stigma knobbed, not 4-cleft.*

6. *E. róseum* (Pale Smooth-leaved Willow Herb).—*Stem* 1—2 feet high, branching, with 2 sharp and 2 blunt angles; *leaves* long-stalked, ovate, toothed, glabrous; *buds* drooping; *flowers* small, rose-coloured.—Moist places, chiefly in the south.—Fl. July, August. Perennial.

7. *E. adnátum* (Square-stalked Willow-Herb).—*Stem* 1—2 feet high, usually much branched, 2—4-angled; *leaves* sessile, decurrent, linear-oblong, much toothed, flat, yellow-green; *buds* erect; *flowers* small, rose-pink.—Damp places; frequent.—Fl. July, August. Perennial.

8. *E. obscúrum*, a similar plant, produces its copious thread-like runners in summer with leaves not in rosettes; its *leaves* are ovate-lanceolate, slightly toothed and dull; and its *flowers* small, with short, narrow, rose-red *petals*.—Damp places; more common than the preceding.—Fl. July, August. Perennial.

9. *E. Lámyi*, as yet only recognised in a few localities, is allied to *E. adnátum*: but differs in its *leaves* being shortly stalked, more shining, dark blue-green, smaller, more distant, and less toothed; and its *flowers*

larger and earlier in appearance.—Damp places.—Fl. June, July. Perennial.

10. *E. palústré* (Narrow-leaved Marsh Willow-Herb).—*Stem* 6—18 in. high, round, with two lines of down on opposite sides, producing slender, small-leaved runners in summer, ending in bulbs in autumn; *leaves* narrowly lanceolate, wedge-shaped at the base, sessile; *buds* drooping; *flowers* small, pink. —Bogs; common.—Fl. July, August. Perennial.

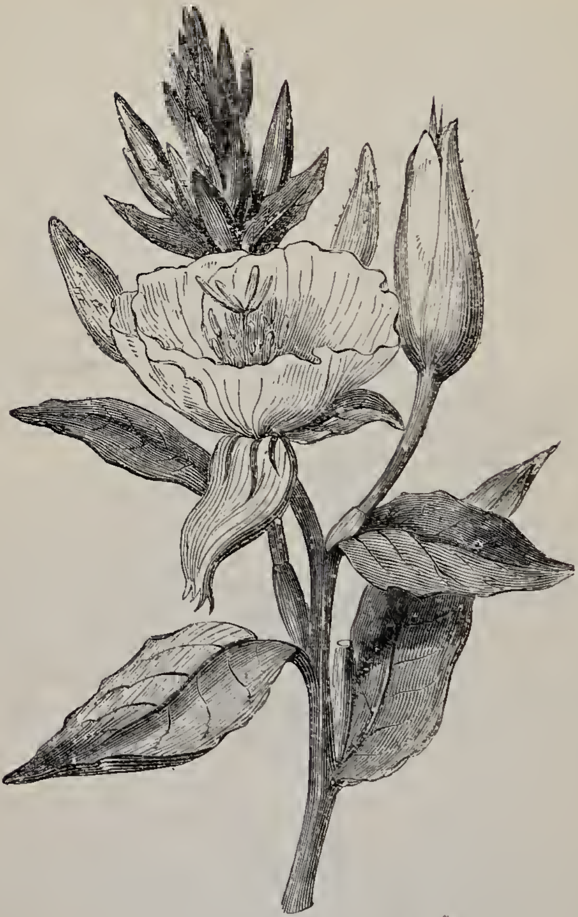
11. *E. alsinefólium* (Chickweed-leaved Willow-Herb).—A low tufted, almost glabrous species; *stems* succulent, with two raised lines of down; *leaves* stalked, ovate, acute, serrate, glabrous, very thin, bright green, shining; *buds* drooping; *flowers* $\frac{1}{3}$ in. across, bright rose-coloured.— By mountain streams in the north.—Fl. July, August. Perennial.

12. *E. alpínum* (Alpine Willow-Herb).—A still smaller form, with slender, not succulent *stem*; obtuse, pale green *leaves*; and 1—3 pale rose-coloured *flowers* drooping in bud.—In similar situations to the preceding.—Fl. July. Perennial.

These plants are by no means easy to distinguish; they vary considerably in many of their characters, and, where two species grow near to one another, hybrids between them occur frequently.

2. Ludwígia (Isnardia).—Herbs with entire *leaves*; axillary, solitary, bracteate *flowers*, usually 4-merous; *sepals* 3—5, persistent; *petals* 3—5, or absent; *stamens* 3—5; *ovary* 3—5-chambered; *style* short; *stigma* 3—5-lobed; *ovules* many; *fruit* a capsule. (Named in honour of Carl Ludwig, Professor of Botany at Leipsic.)

1. *L. palústris* (Marsh Isnardia). — The only British species, a small, prostrate, glabrous plant, 6—10 in. long, with 4-angled, branched *stems*, rooting at the nodes; opposite, stalked, ovate, acute,



ŒNOTHÉRA BIÉNNIS (*Common Evening Primrose*).

shining *leaves ;* and minute, axillary, sessile, apetalous, 4-merous *flowers*.—Boggy pools in the New Forest and formerly in Sussex.—Fl. June, July.

*3. Œnothéra (Evening Primrose).—American herbs, with scattered *leaves;* large 4-merous *flowers; calyx-tube* prolonged above the top of the ovary and constricted so as to form a honey-chamber; *sepals* deciduous; *stamens* 8. (Name in Greek *oinothēras,* employed by Theophrastus, signifying "catching the flavour of wine.")

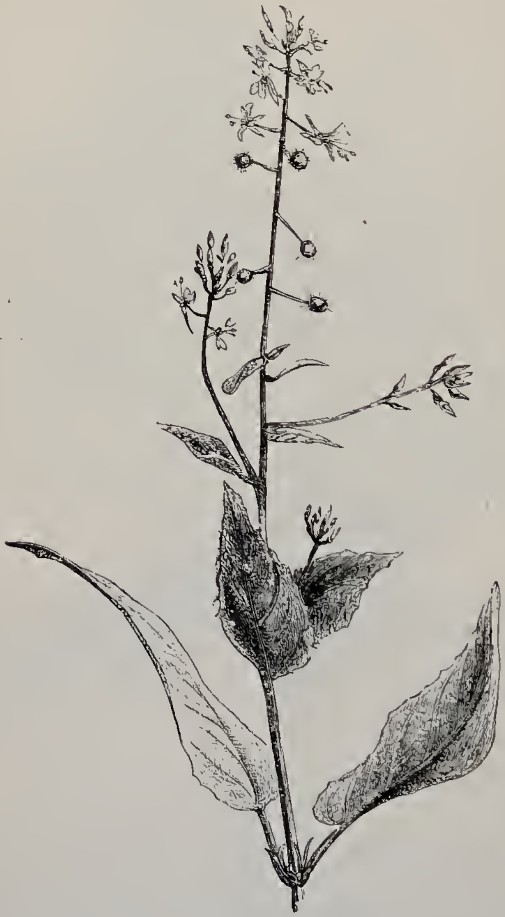
1.* *Œ. biénnis* (Common Evening Primrose).—A tall, stout herbaceous plant, 2—3 feet high, with lanceolate smooth *leaves;* large, pale yellow, fragrant *flowers,* which open in the evening, and wither towards the middle of the next day; and a long *capsule* bluntly 4-sided and widest near its base. It is a native of North America, and is naturalised in a few places.—Fl. July—September. Biennial.

2.* *Œ. odoráta* (Fragrant Evening Primrose), differing mainly in having brighter green *leaves,* deeper yellow *flowers,* and a *capsule* widest near the top, is a native of Patagonia, naturalised at some points on the south-west coast.—Fl. July—September. Biennial.

4. CIRCǼA (Enchanter's Nightshade).—Slender, erect herbs with creeping rhizomes; *leaves* opposite, stalked, toothed; *flowers* in racemes, small, white, 2-merous; *sepals* reflexed, deciduous; *style* slender; *stigma* 2-lobed; *ovules* 1 or 2; *fruit* indehiscent, covered with hooked bristles. (Name from Circe, the enchantress who bewitched Ulysses and his companions.)

1. *C. lutetiána* (Common Enchanter's Nightshade).—A slender herbaceous plant, pubescent with glandular hairs, 1—2 feet high, with round-stalked, ovate, spreading, dull *leaves,* and loose terminal and lateral racemes of minute white *flowers,* with pink *stamens,* suceeeded by 2-lobed bristly *fruits.*—Damp shady places; common, often a troublesome weed in damp gardens.—Fl. June—August. Perennial.

2. *C. alpína* (Alpine Enchanter's Nightshade).—Closely resembling the last, but smaller, not exceeding 8 in. in height, less hairy, less branched; *leaves* cordate, shining, more deeply-toothed, and with



CIRCÆA LUTETIÁNA (*Common Enchanter's Nightshade*).

flat stalks. They are so delicate as to be nearly transparent when dried. The *fruit* is less bristly and 1-seeded.—Mountainous woods in the north.—Fl. July, August. Perennial.

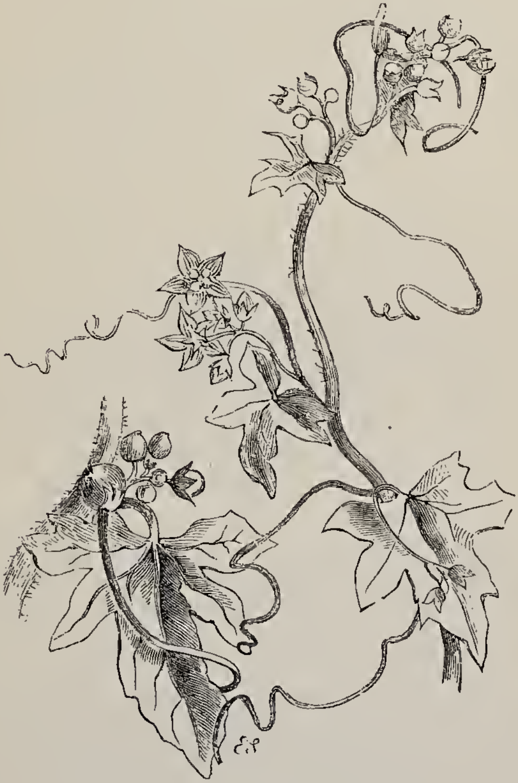
ORD. XXXIII. CUCURBITÁCEÆ.—THE GOURD FAMILY.

A large and important Order, chiefly tropical, but having only one British representative. They are herbaceous plants with juicy *stems*, climbing by means of tendrils; scattered, exstipulate *leaves* which are usually lobed and rough; pentamerous *flowers* which are often large, yellow, red, or white, and imperfect; and *fruit* either a berry or a gourd (pepo), horny externally when ripe. The *calyx* is superior and 5-toothed; the *corolla* so united to the calyx-tube as to be sometimes scarcely distinguishable; the 5, more or less united, *stamens*, with twisted *anthers*, in distinct flowers from the 1-chambered *ovary* of 3 united *carpels*, either on the same plant (monœcious) or on different plants (diœcious). The *style* is short, the *stigmas* are thick, lobed and velvety, and the *seeds* flat. A great number of species are cultivated in Europe either for use or ornament. Many of them are bitter and violent purgatives, of which the common medicinal Colocynth (*Citrúllus Colocýnthis*) is an example. This species bears an oval fruit of a very bitter taste, and grows in sandy and desert places. It is almost certainly the wild cucumber mentioned in 2 Kings iv. 39, 40, as it still grows in profusion at Gilgal, and as its leaves, tendrils, and fruit, though somewhat smaller, are so similar to those of the garden cucumber (*Cúcumis satívus*) that it might easily happen that the man sent out by the disciples of the prophet took them for a harmless plant and prepared a meal of them. The bitter taste made the disciples at once fear that it was poisonous, such a taste being generally believed by the Hebrews to indicate poison. (See Rev. viii. 10, 11). The Colocynth may also be the vine of Sodom of Deuteronomy xxxii. 32. The Squirting Cucumbers (*Ecbálium*), the fruit of which, when ripe, detaches itself from its stalk, squirting its juice and seeds backwards, is also a very powerful drug known as Elaterium. A case is even recorded of a person being taken dangerously ill from having merely carried a specimen in his hat. Many species of the Order, however, produce edible fruit, as, for instance, the numerous varieties of the Cucumber (*Cúcumis satívus*), Melon (*Cúcumis Mélo*), and Water Melon (*Cúcumis Citrúllus*), and one of our finest vegetables, the Vegetable Marrow (*Cucúrbita ovífera*). The only British member of the Order, the White Bryony (*Bryónia dióica*), partakes of the properties of Colocynth, and its root is used in medicine. It is said that its tender shoots may be eaten boiled, and resemble Asparagus in flavour; but the shoots of the Black Bryony (*Támus commúnis*), a widely different plant, belonging to another Order, may have been meant; and, in either case, the experiment is a dangerous one.

1. Bryónia (White Bryony).—Slender climbing herbs, with palmately 3—5-angled or lobed *leaves*; *calyx-tube* campanulate; *corolla* rotate or campanulate; *stamens* 5, united in 3; *style* 3-cleft; *fruit* a globose berry. (Name from the Greek *bruo*, I shoot, from the rapid growth of the shoots.)

1. *B. dióica* (White Bryony).—The only British species, an elegant climbing plant, densely clothed with white hairs; *tendrils* unbranched; *leaves* large, light green, palmately 5-lobed, rough; *flowers* diœcious, whitish, with green veins. The fertile (pistillate)

flowers can be at once distinguished from the barren (staminate) ones by the presence of the globular *ovary* below the calyx. These are succeeded by globular scarlet *berries*, which hang about the bushes after the stems and leaves have withered. The berries of the



BRYÓNIA DIÓICA (*White Bryony*).

Black Bryony (*Támus commúnis*), a twining plant without tendrils, are larger and elliptical. Both should be avoided as probably poisonous.—Hedgerows; frequent, except in the north and west.—Fl. May—September. Perennial.

ORD. XXXIV. UMBELLÍFERÆ.—THE PARSLEY FAMILY.

A large and very natural Order of herbaceous plants, comprising about 1,500 species, in 152 genera, mostly natives of the temperate region of the Northern Hemisphere. They have hollow or solid jointed *stems*, and in most cases pinnately divided, often decompound, *leaves*, more or less sheathing at the base. The *flowers* are usually small, polysymmetric, 5-merous, white, and grouped in *compound umbels:* each flower, that is to say, is stalked, the stalks radiating from one point. Such a *simple umbel* occurs in three British genera—*Hydrocótylé*, *Erýngium*, and *Astrántia;* but in the others several such umbels, then known as *secondary* or *partial umbels* or *umbellules*, are collected into one *primary* or *general umbel.* There is generally an *involucre* of bracts at the base of the primary umbel, and *involucels* at the bases of the secondary ones. The *calyx* is superior, 5-toothed, or more often reduced to a mere margin; the 5 *petals* usually end in inflexed points; and the 5 *stamens* (which, like the petals, with which they alternate, are epigynous) also bend inwards in bud, but commonly mature before the stigmas. The 2 *carpels* are situated antero-posteriorly, one at the back, that is, and one at the front of the flower, and are united into an inferior, 2-chambered *ovary*, crowned by a fleshy *disk*, which bears the petals and stamens; and there are 2 distinct *styles.* In the fruit, which is known as a *cremocarp*, the 2 carpels cohere by their flattened inner faces, which form what is termed the *commissure*, to a central axis or *carpophore*, which is often Y-shaped, and from which, as they ripen, they separate from below upward. The fruit is often flattened, either *dorsally*, from front to back, that is, or in a direction at right angles to the commissure, so that this lateral plane is broad, or *laterally*, from side to side, or in a direction parallel to the commissure, which is, therefore, narrow. Each carpel or *mericarp* is marked by vertical *ridges*, normally 9 in number, 5 *primary*, usually the more prominent, and 4 *secondary* alternating with them. Of the 5 primary ridges, the 2 nearest the commissure are termed *lateral*, and are often expanded into wings; the midrib down the back of the carpel is the *carinal* or *dorsal ridge*; and the two to the right and left of it are called the *intermediate ridges.* The spaces between the primary ridges are called *furrows.* In the wall of the fruit there are often long, narrow sacs called *vittæ* or *stripes* containing coloured essential oil. They generally occur between the ridges, rarely in them. Normally there are 6 in each carpel, 4 between the primary ridges and 2 in the commissural face; but instead of being thus *solitary* in each furrow, they may be 2, 3, or more together, or they may be fewer in number. There is one pendulous *seed* in each carpel, containing horny *albúmen*, and it

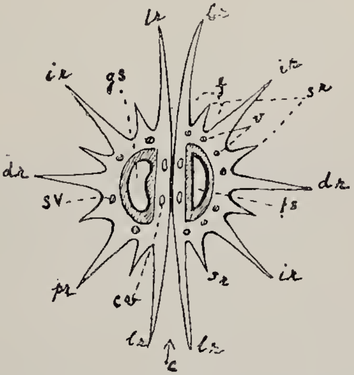


Diagram Section of Fruit of Umbellifer. *c*, commissure; *dr*, dorsal or carinal ridge; *ir*, intermediate ridge; *lr*, lateral ridge; *pr*, primary ridge; *sr*, secondary ridge; *f*, furrow; *v*, vitta; *sv*, solitary vitta; *cv*, commissural vitta; *fs*, flat seed; *gs*, grooved seed.

is important to notice whether it is flat or grooved along the side facing the commissure. The ridges, vittæ, and seeds are best examined by a lens on a cross section of a fruit; the so-called Caraway-seed, for instance, which is, accurately speaking, a mericarp or carpel. The Order being, as has been said, a very natural one, its genera agree in almost all their more obvious characters, and can only be accurately discriminated by minute differences, chiefly in the ripe fruit, such as the number, position, and shape of the ridges, the presence or absence of vittæ, and the form of the seed. This renders the group a very difficult one for the young botanist. It has been divided into 9 tribes, six of which are represented by British plants. There are about 70 British species belonging to 40 genera.

Among so large a number of species one would naturally expect to find a variety of properties, and such is to a certain extent the case; but from this point of view the members of the Order may be conveniently arranged in four groups. The first group comprises plants abounding in an acrid, watery sap, which is more or less narcotic and poisonous. Among these is the Hemlock (*Coníum*), the Water Hemlock (*Cicúta*), the Fool's Parsley (*Æthúsa*), and the Water Dropworts (*Œnánthé*). Every part of the Hemlock, especially the fresh leaves and green fruit, contains the alkaloid *Conía*, which is very poisonous. It acts on the nervous system, and is a valuable medicine in certain cases. Of all British Umbelliferæ, the most dangerous, perhaps, are the Water Dropworts (*Œnánthé*), their large, tuberous roots, resembling those of the Dahlia, being commonly exposed on the muddy banks of streams, and being thus easily got at by children and cattle.

The second group comprises plants the stems of which abound in a fœtid gum-resin. Among these the first place is held by *Asafœtida*, the hardened milky juice of various species of *Férula* inhabiting Persia and the neighbouring countries. This drug was held in high repute among the ancients for its medical virtues : it was supposed to be an antidote to poison, to restore sight to the blind, and youth to the aged ; and was besides considered a certain specific against various diseases. *Gum Gálbanum* is the product of other species of *Férula*, natives of the East.

The third group comprises plants the fruits of which abound in wholesome aromatic oils. The principal of these are well known under the names of *Caraway*, *Coriander*, *Dill*, *Anise*, and *Cumin.*

The fourth group comprises plants which contain some of the above principles in a very slight degree, or so modified as to form wholesome esculent vegetables. Among these, *Carrots* and *Parsnips* occupy the first place : *Celery* and *Alexanders*, in their wild state, are too acrid to be used as food ; but, when blanched by being earthed up or covered over, become mild and agreeable : *Parsley*, *Fennel*, and *Chervil*, the last now out of use, are well-known pot-herbs : *Samphire* affords the best of pickles: the sweet, aromatic, and tonic root of *Eryngo* and the stem of *Angelica* (*Archangélica officinális*) are candied as sweetmeats ; and the root of the latter, which is fragrant and sweet when first tasted, but leaves a glowing heat in the mouth, is valued by the Lapps both as food and as medicine. Several species produce underground tubers, which, under the name of *pig-nuts* or *earth-nuts*, are eaten by children and pigs.

Tribe 1. *Hydrocotyléæ.—Umbel simple ; fruit much compressed laterally ; commissure narrow ; no carpophore or vittæ.*

1. HYDROCÓTYLÉ.—Creeping ; *leaves* simple, peltate.

Tribe 2. *Saniculeæ.—Umbel simple, capitate or irregularly compound; fruit slightly dorsally compressed; commissure broad; no carpophore.*

2. Erýngium.—*Leaves* spinous; *umbels* in dense heads; *fruit* scaly, without ridges or vittæ.

*3. Astrántia.—*Leaves* palmatifid; *bracts* large, often coloured; *fruit* without vittæ.

4. Sanícula.—*Leaves* palmatifid; *umbels* sub-globose, irregularly compound; *fruit* covered with hooked bristles, without ridges; *vittæ* numerous.

Tribe 3. *Ammíneæ.—Umbels compound; fruit laterally compressed; commissure narrow; primary ridges most conspicuous: vittæ usually obvious.*

* *Fruit short, not winged; seed grooved in front.*

5. Physospérmum.—*Fruit* globose, bladder-like, with slender thread-like *ridges* and solitary *vittæ.*

6. Coníum.—*Fruit* ovoid, each carpel with 5 prominent wavy *ridges*; *carpophore* undivided.

7. Smýrnium.—*Flowers* yellow; *carpels* kidney-shaped, each with three prominent sharp ridges (dorsal and intermediate); *vittæ* numerous; *carpophore* forked.

** *Fruit short, not winged; seed flat in front.*

8. Bupleúrum.—Erect; *leaves* undivided; *flowers* yellow; *petals* with an inflexed point; *carpophore* forked.

9. Trínia.—*Leaves* pinnate; *flowers* white, diœcious; *carpophore* forked; *vittæ* 5, large, in the bases of the thick primary ridges.

10. Ápium.—*Leaves* pinnate or ternate; *bracts* absent; *bracteoles* many or absent; *flowers* white, perfect; *petals* entire; *ridges* slender, prominent; *vittæ* solitary.

11. Cicúta.—*Leaves* pinnate; *bracts* few or absent; *bracteoles* several, small, unequal; *sepals* ovate, acute; *petals* white, obcordate with a long inflexed tip; *carpophore* forked; *ridges* flat; *vittæ* solitary, long.

*12. Ámmi.—*Leaves* pinnate; *bracts* with 3—5 linear segments; *sepals* absent; *petals* white, obcordate with a long inflexed tip; *carpophore* forked; *ridges* slender; *vittæ* solitary.

13. Cárum.—*Leaves* pinnate; *bracts* few or absent; *sepals* inconspicuous; *petals* white, pink, or yellow; deeply notched with a long inflexed tip; *carpophore* forked; *ridges* slender, blunt; *vittæ* solitary, rarely 2 together, as long as the fruit.

14. Síson.—Resembling *Cárum*, but with the upper *leaves* less divided, and *vittæ* very short.

*15. Falcária.—Glabrous; *lower leaves* ternate, *upper* pinnatisect; *bracts* and *bracteoles* many; *flowers* white, often imperfect; *petals* curved; *vittæ* solitary; *carpophore* forked.

16. Síum.—*Leaves* pinnate; *bracts* and *bracteoles* many; *sepals* acute; *petals* white, entire, with an inflexed tip; *carpophore* not forked; *ridges* prominent, slender, blunt; *vittæ* 3 or more together, long.

17. Ægopódium.—*Leaves* biternate; *bracts* and *bracteoles* few or absent; *sepals* absent; *petals* white, broad, unequal, with inflexed tip; *ridges* slender; *vittæ* absent.

18. Pimpinélla.—*Leaves* pinnate; *bracts* generally absent; *sepals* inconspicuous; *petals* white or yellow, deeply notched with a long inflexed tip; *carpophore* forked; *ridges* slender, prominent; *vittæ* many together, long.

*** *Fruit more or less beaked; seed grooved in front.*

19. Conopódium.—*Leaves* triternate; *bracts* and *bracteoles* few, membranous; *sepals* absent; *petals* white, often unequal, 2-fid, with inflexed tip; *fruit*

shortly beaked; *carpophore* forked; *ridges* slender; *vittæ* 3 together.

20. Mýrrhis.—*Leaves* decompound; *bracts* absent; *bracteoles* membranous; *sepals* inconspicuous; *petals* white, obcordate with a very short inflexed point; *fruit* elongate but hardly beaked; *ridges* sharp, prominent, almost winged; *vittæ* absent.

21. Chærophýllum.—*Leaves* decompound; *bracteoles* several; *sepals* inconspicuous; *petals* white or yellow, obcordate, with inflexed tip; *fruit* hardly beaked; *ridges* blunt, not prominent; *vittæ* solitary.

22. Scándix. — *Leaves* decompound; *bracteoles* several; *sepals* inconspicuous; *petals* white, often unequal; *fruit* 1—3 in. long; *ridges* prominent, blunt.

23. Anthríscus.—*Leaves* decompound; *bracteoles* many, entire; *sepals* inconspicuous; *petals* white, with an inflexed tip; *fruit* short, shortly beaked; *ridges* obscure.

Tribe 4. *Seselíneæ.—Umbels compound; fruit globose or ovoid, not laterally compressed, prickly nor beaked: commissure broad; primary ridges the most conspicuous; lateral ridges distinct, rarely winged; vittæ usually obvious.*

24. Séseli.—*Leaves* 2-, 3-, or more, pinnate; *bracteoles* many, entire; *sepals* small, acute; *petals* white, obcordate, with long inflexed tip; *fruit* slightly dorsally compressed; *carpophore* forked; *ridges* thick, blunt, prominent; *vittæ* solitary or 2 together; *seed* flat in front.

25. Fœnículum.—*Leaves* decompound; *bracts* and *bracteoles* absent; *sepals* inconspicuous; *petals* yellow, roundish, with a short, blunt, inflexed tip; *carpophore* forked; *ridges* prominent, blunt; *vittæ* solitary.

26. Críthmum. — Fleshy; *leaves* 2—3-ternate; *bracts* and *bracteoles* many, short; *sepals* inconspicuous;

petals minute, white, broad, with long inflexed tip; *carpophore* forked; *ridges* thick, acute, slightly winged; *vittæ* many; *seed* loose, flat in front.

27. ŒNÁNTHÉ.—*Leaves* pinnate; *bracts* few or none; *bracteoles* many, whorled; *sepals* lanceolate; *petals* white, obcordate with long inflexed tip; *carpophore* absent; *styles* sub-erect; *ridges* blunt, the lateral ones forming a corky rim round the carpel; *vittæ* solitary; *seed* flat in front.

28. ÆTHÚSA, differing mainly in having the *bracts* and *bracteoles* drooping and all on one side, a slender forked *carpophore*, and reflexed *styles*.

*29. SILER.—*Leaves* 3-ternate; *bracts* 1—3; *bracteoles* several; *sepals* distinct; *petals* obovate, with inflexed tip; *fruit* dorsally compressed; *vittæ* one under each secondary ridge.

30. SILÁUS.—*Leaves* decompound; *bracteoles* many; *sepals* inconspicuous; *petals* yellowish, broad, with incurved tip; *carpophore* forked; *ridges* slightly winged; *vittæ* many, obscure; *seed* flat in front.

31. MÉUM.—*Leaves* decompound; *bracts* linear; *bracteoles* many; *sepals* inconspicuous; *petals* yellowish, narrowed at both ends, inflexed; *carpophore* forked; *fruit* much as in *Siláus*, but dorsally compressed; *seed* concave in front.

32. LIGÚSTICUM. — *Leaves* 1—3-ternate; *bracts* few; *bracteoles* many; *sepals* small; *petals* white or pink, with short claw, notched, with long inflexed point; *carpophore* forked; *ridges* acute, somewhat winged; *vittæ* 2 or more together; *seed* almost flat in front.

33. SELÍNUM.—*Leaves* 2-pinnate; *bracts* usually absent; *bracteoles* many, subulate; *sepals* inconspicuous; *petals* white, obcordate, notched, inflexed; *carpophore* forked; *fruit* dorsally compressed; *ridges* with membranous wings, the lateral longest, diverging; *vittæ* solitary.

34. ANGÉLICA.—*Leaves* 2-ternate; *bracts* few;

bracteoles many; *sepals* inconspicuous; *petals* white, notched, with short inflexed tip; *carpophore* forked; *fruit* much dorsally compressed; *lateral ridges* with membranous wings, parallel, thin; *vittæ* solitary or 2 together.

*35. ARCHANGÉLICA, differing mainly in having minute *sepals*, thicker dorsal and intermediate *ridges*, no *vittæ* and loose *seeds*.

Tribe 5. *Peucedáneæ.—Umbels compound; fruit much dorsally compressed; primary ridges most conspicuous, the lateral ones with broad wings closely face to face, the others slender; vittæ usually obvious.*

36. PEUCÉDANUM.—*Leaves* pinnate; *bracts* and *bracteoles* absent, few or many; *sepals* small or inconspicuous; *petals* yellow or white, with an inflexed point; *carpels* flat; *lateral ridges* forming thin, flat, contiguous, parallel wings; *dorsal* and *intermediate ridges*, slender; *vittæ* as long as the fruit, linear.

37. HERÁCLEUM.—*Leaves* pinnate with broad segments; *outer flowers* irregular; *petals* white or pink, obcordate with an inflexed point; *fruit* as in *Peucédanum*, but *vittæ* short, club-shaped.

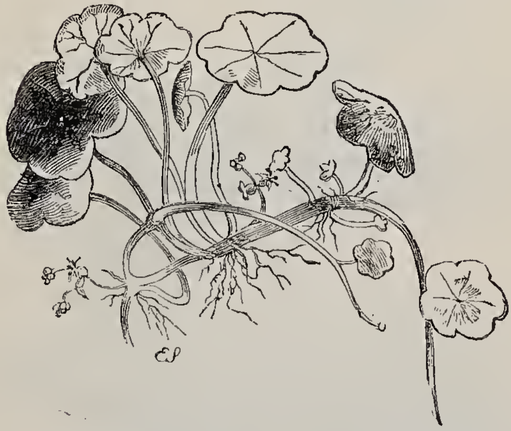
*38. TORDÝLIUM.—*Leaves* pinnate; *bracts* and *bracteoles* as many as the pedicels, linear; *sepals* subulate; *petals* white or pink, sometimes 2-lobed, with inflexed tip; *lateral ridges* forming thick, flat, contiguous, parallel wings; *dorsal* and *intermediate ridges* slender; *vittæ* 1—3 together.

Tribe 6. *Caucalíneæ.—Umbels generally compound; secondary ridges more prominent than the primary, often prickly; vittæ solitary, under the secondary ridges.*

*39. CORIÁNDRUM.—*Leaves* decompound; *bracts* absent; *bracteoles* few, thread-like; *sepals* acute; *petals* white or pink, 2-lobed, often irregular, point inflexed; *fruit* globose; *carpels* coherent; *ridges* low; *vittæ* obscure; *seed* curved.

40. DAÚCUS.—*Leaves* decompound; *bracts* and *bracteoles* usually many, pinnatifid; *sepals* slender; *petals* white or red, notched, often irregular, with inflexed lobe; 4 *secondary ridges*, each bearing a row of prickles; *seed* flat in front.

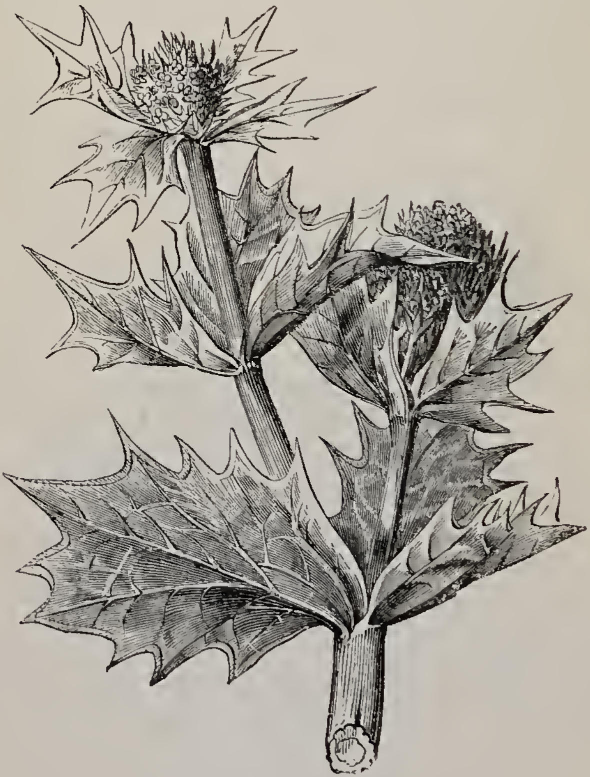
41. CAÚCALIS.—*Leaves* pinnate; *bracts* few, entire or absent; *bracteoles* many; *sepals* acute or absent; *petals* as in *Daúcus*; *primary* and *secondary ridges* with 1—3 rows of prickles each; *seed* deeply grooved in front.



HYDROCÓTYLÉ VULGÁRIS (*Common White-rot, Marsh Pennywort*).

1. HYDROCÓTYLÉ (Marsh Pennywort).—Small creeping herbs; *leaves* simple, peltate, orbicular; *flowers* in simple umbels; *fruit* roundish, flattened. (Name from the Greek *hudor*, water, and *kŏtulé*, a dish, from the shape of the leaves and place of growth.)

1. *H. vulgáris* (Marsh Pennywort, White-rot).—The only British species, very unlike other British Umbelliferæ, with round, smooth, shining, crenate *leaves*, 1—1½ in. across, with hairy stalks; and inconspicuous heads of a few, minute *flowers*, which never rise above the leaves, and require a close search to be detected at all.—Marshes and bogs; common.—Fl. May—August. Perennial.



ERÝNGIUM MARÍTIMUM (*Sea Eryngo, Sea Holly*).

2. Erýngium (Eryngo).—Stiff, branched, often glaucous plants; *leaves* reduced to spinous sheaths; *flowers* sessile, in dense heads with a spinous *involucre*; *fruit* covered with chaffy scales. (Name of uncertain etymology.)

1. *E. marítimum* (Sea Holly, Sea Eryngo).—A stout, stiff, prickly, glaucous plant, with more of the habit of a Thistle than of the Order to which it belongs. The large, fleshy, brittle *rhizomes* extend several feet into the sand. The *stems* are trichotomous and often prostrate; *flowers* grey-blue.—Sandy sea-shores; frequent. The rhizomes used formerly to be candied as a sweetmeat.—Fl. July, August. Perennial.

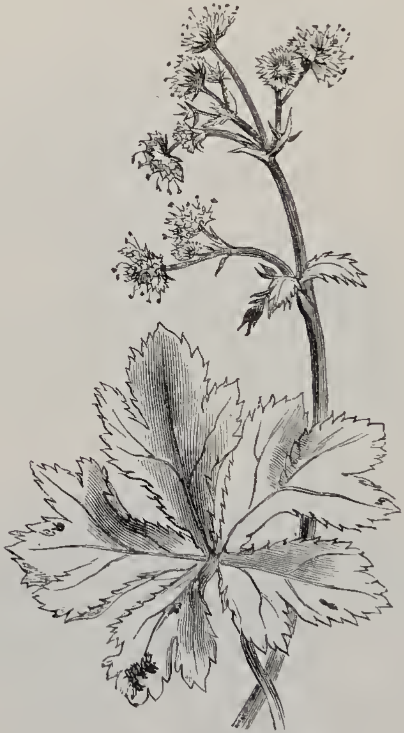
2. *E. campéstré* (Field Eryngo), a taller, more erect, more slender, more branched and less glaucous species, with pinnatifid *leaves*, occurs on waste ground and ballast-heaps; but is very rare.—Fl. July, August. Perennial.

*3. Astrántia.—Erect plants; *leaves* palmatifid; *umbels* simple or irregularly compound, with *involucres* of large, simple *bracts*, which are often coloured; *sepals* leafy; *petals* white or pink, with a long inflexed point; *fruit* ovoid with 5 wrinkled toothed *ridges* and no vittæ. (Name from the Greek *astron*, a star, from the star-like involucres.)

1.* *A. májor* (Greater Astrantia).—*Stem* 1—2 feet; *leaves* 3—7-lobed, serrate, with bristly teeth; *bracts* ovate-lanceolate, white below, green tinged with pink above; *flowers* white or pink. Naturalised in woods near Ludlow and Malvern.—Fl. June—August. Perennial.

4. Sanícula (Sanicle).—Slender, erect plants; *leaves* palmately-lobed; *umbels* small, irregularly com-

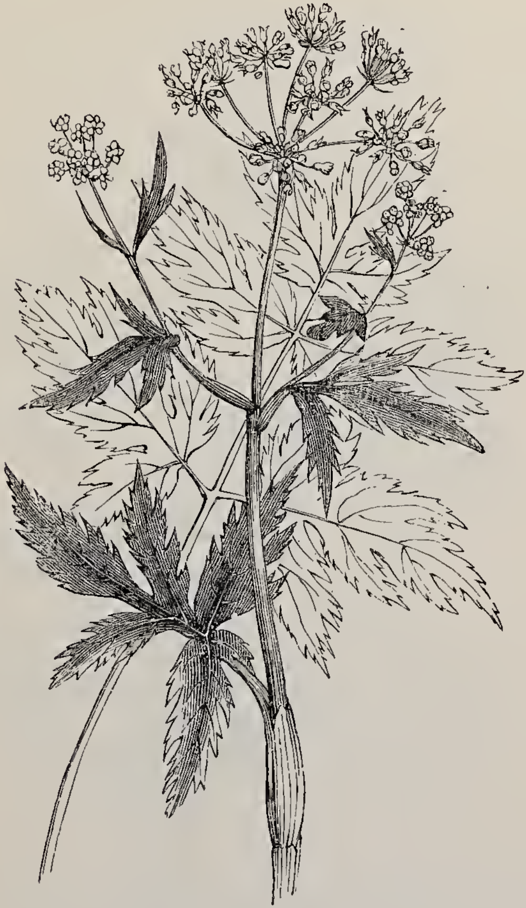
pound, of few pedicels ending in capitate secondary umbels; *bracts* leafy; *outer flowers* without stamens, the *inner* without carpels; *fruit* covered with hooked prickles. (Name, a diminutive from the Latin *sano*, I heal, from supposed healing qualities.)



SANÍCULA EUROPÆA (*Wood Sanicle*).

1. *S. europǽa* (Wood Sanicle).—The only British species, a glabrous plant about a foot high; *leaves* 3—5-lobed, lobes 3-fid, serrate, glossy; *flowers* dull white, in small rounded heads.—Woods; common, often in dense shade.—Fl. June, July. Perennial.

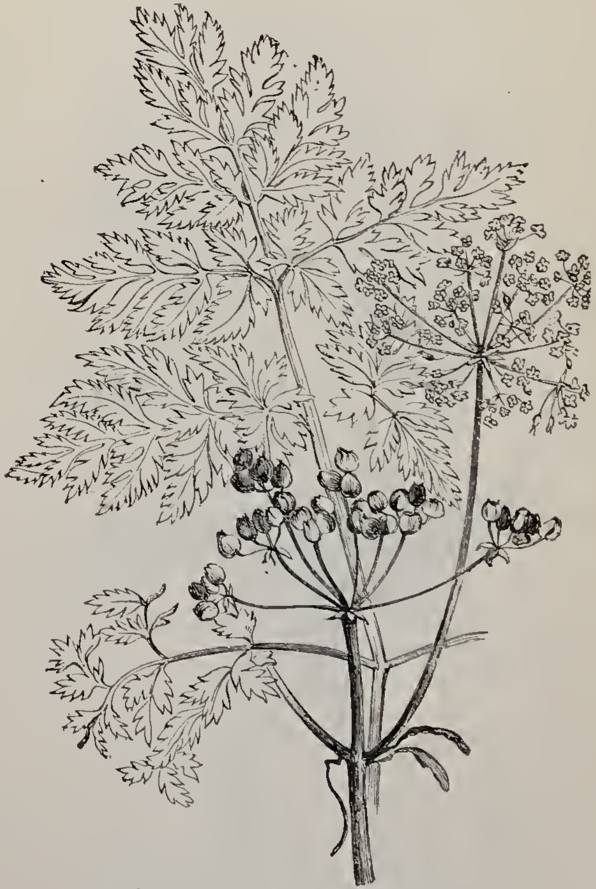
5. Physospérmum (Bladder-seed).—Erect plants; *leaves* 3-ternate; *leaflets* wedge-shaped; *umbels* compound; *bracts* and *bracteoles* few, linear; *flowers* white; *fruit* broader than long, bladder-like; seed loose.



PHYSOSPÉRMUM COMMUTÁTUM (*Cornish Bladder-seed*).

(Name from the Greek *phusa*, a bladder, *sperma*, a seed.)

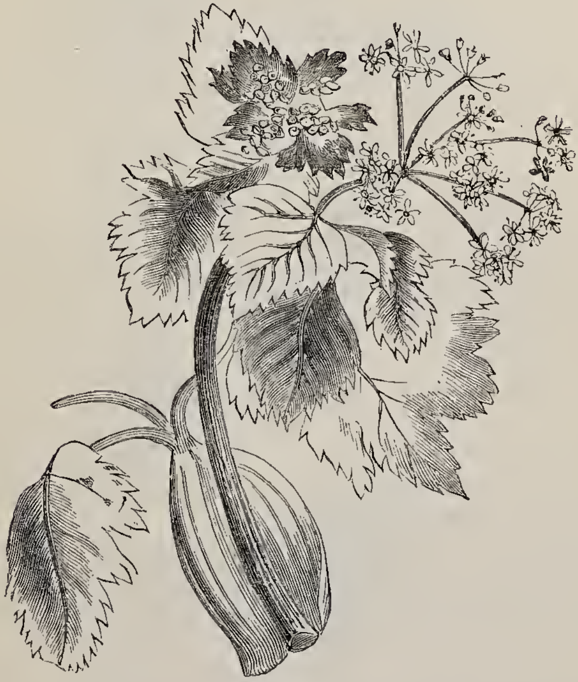
1. *P. commutátum* (Cornish Bladder-seed).—A



CONÍUM MACULÁTUM (*Common Hemlock*).

glabrous plant, about 2 feet high, with ribbed, round, branched *stem*; long-stalked, 3-ternate *leaves* with downy margins and veins; and long-stalked, terminal and axillary *umbels*.—It is found only near Bodmin, Cornwall, and Tavistock, Devon.—Fl. July, August. Perennial.

6. Coníum (Hemlock). — Tall, glabrous plants; *leaves* pinnate; *umbels* compound; *bracts* and *bracteoles* many, small; *sepals* absent; *petals* white, blunt, or with shortly inflexed tip. (Name from the Greek *konêion*, hemlock.)



SMÝRNIUM OLUSÁTRUM (*Common Alexanders*).

1. *C. maculátum* (Common Hemlock).—The only British species, a much-branched, gracefully growing

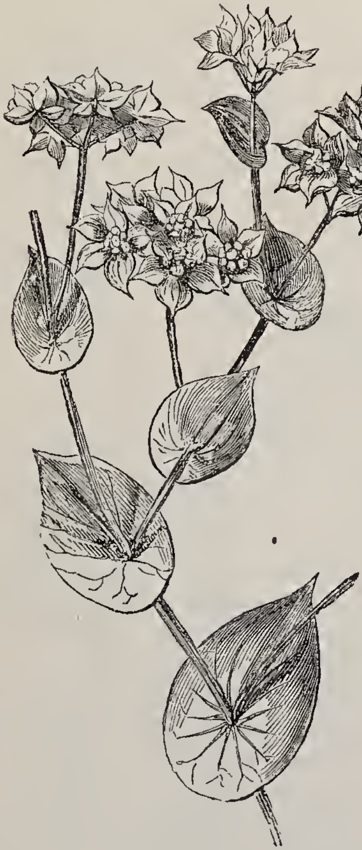
plant, usually from 2—4 feet high, but in sheltered situations sometimes more than double that height, with a slender, perfectly smooth, furrowed *stem* spotted with red; finely tripinnate *leaves*, which are also smooth; *bracteoles* on one side only of the base of the secondary umbels; and white *flowers*.—Hedges and waste places; common. Country people are in the habit of calling many Umbelliferæ by the name of Hemlock; but the true Hemlock may be readily distinguished by the above characters and by its fœtid smell. It is extremely poisonous.—Fl. June, July. Biennial.

7. SMÝRNIUM (Alexanders).—Stout, erect, smooth plants; *leaves* 3—4-ternate, with broad segments; *umbels* compound; *bracts* and *bracteoles* few or none; *sepals* minute or none; *petals* yellow. (Name from the Greek *smurna*, myrrh, from the scent of some species.)

1. *S. Olusátrum* (Common Alexanders).—A stout plant, 3—4 feet high; *stem* smooth, furrowed, and hollow; *leaves* broad, bright green, glossy, 3—4-ternate; *umbels* many, large, rounded; *flowers* greenish-yellow; *fruit* dark brown or nearly black when ripe, aromatic.—Waste ground, especially near the sea and among ruins. It was formerly cultivated, its young shoots being boiled and eaten.—Fl. April—June. Biennial.

8. BUPLEÚRUM (Buplever).—Erect, smooth plants; *leaves* reduced to simple, entire sheaths; *umbels* compound; *bracts* and *bracteoles* sometimes numerous and leafy; *sepals* absent; *petals* yellow, inflexed; *fruit* oblong; *carpels* with 5 usually prominent ridges. (Name said to be from the Greek *bous*, an ox, and *pleuron*, a rib, from the ribbed leaves of some species.)

1. *B. rotundifólium* (Common Hare's-ear or Thorow-wax).—A singular plant, well distinguished by its branched *stem* ; perfoliate, roundish, ovate, glaucous *leaves*, and large greenish-yellow, bristle-pointed *bracteoles*, thrice as long as the minute yellow *flowers*.—Cornfields on chalky soil ; rare.—Fl. July. Annual.



BUPLEÚRUM ROTUNDIFÓLIUM (*Common Thoròw-wax, Hare's-ear*).

2. *B. aristátum* (Narrow-leaved Buplever), a small

plant, 3—6 in. high, with pale, sword-shaped, 3—5-veined, rigid *leaves*, and 3—5 large, sharp-pointed *bracteoles* concealing the umbels of greenish *flowers*, occurs on sandy banks near Torquay and Eastbourne, and in the Channel Islands.—Fl. June, July. Annual.

3. *B. tenuíssimum* (Slender Buplever). — *Stem* slender, wiry, about a foot high ; *leaves* linear, acute, 3-veined ; *umbels* small ; *bracts* and *bracteoles* narrow, subulate ; *flowers* minute, yellowish.—Salt marshes ; rare.—Fl. August, September. Annual.

4. *B. falcátum* (Sickle-leaved Buplever).—*Stem* erect, slender, hollow, 1—4 feet high ; *leaves* oblong-lanceolate, curved, acute, 5—7-veined, *umbels* small ; *bracts* and *bracteoles* 2—5, as long as the minute yellow *flowers*. —Near Ongar, Essex, and Herts.—Fl. August, September. Perennial.

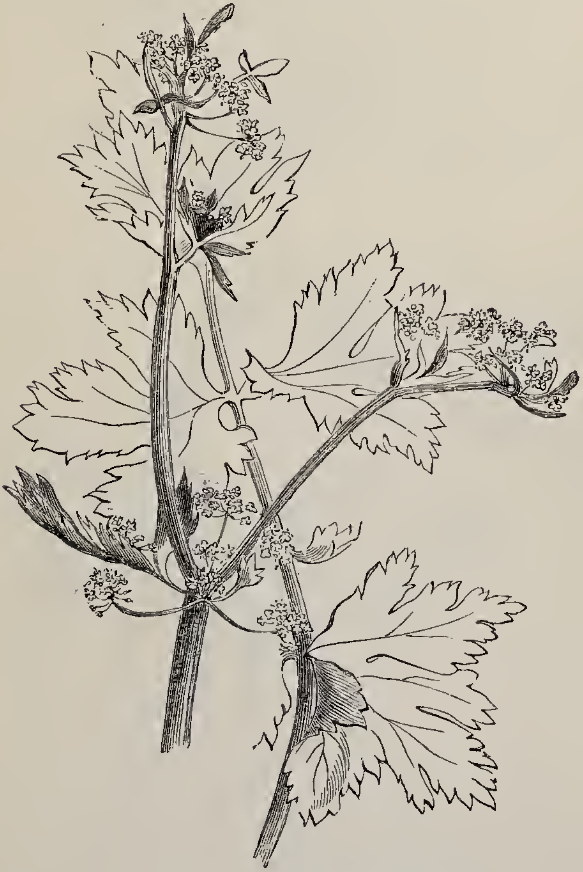
9. Trínia (Honewort).—Glabrous branched plants ; *leaves* tripinnate ; *umbels* compound, few-rayed ; *bracts* and *bracteoles* 1—3 each ; *flowers* white, diœcious ; *sepals* inconspicuous ; *petals* with an inflexed tip, those of the staminate plants lanceolate, those of the pistillate plants ovate ; *vittæ* solitary, in the bases of the primary ridges. (Named in honour of Dr. Trinius, a Russian botanist.)

1. *T. glabérrima* (Honewort). — Glaucous, 3—8 in. high ; *stem* solid, stout, grooved ; *branches* divergent ; *leaves* spreading, with slender stalks and linear segments ; *bract* solitary, 3-cleft, or absent ; *bracteoles* 2—3-linear ; *flowers* minute. — Dry limestone rocks, Bristol and South Devon ; very rare.—Fl. May, June. Perennial.

10. Ápium.—Glabrous ; *leaves* pinnate or ternate ; *umbels* compound, often in the forks of the stem ; *bracts* absent ; *bracteoles* many or absent ; *sepals*

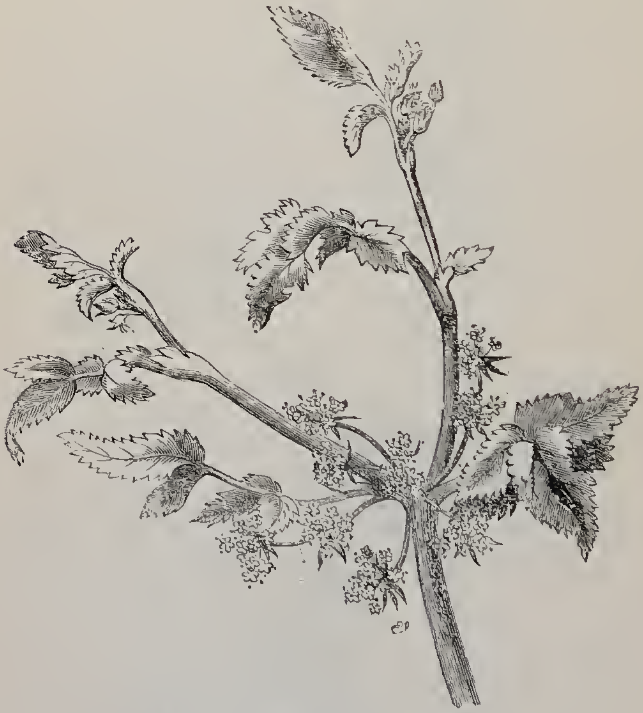
absent; *petals* entire. (Name, the Classical name of this or some allied genus.)

1. *A. gravéolens* (Wild Celery, Smallage).—*Stem*



Ápium gravéolens (*Wild Celery, Smallage*).

usually 1—2 feet high, furrowed, branched, and leafy, but sometimes nearly prostrate; *leaves* pinnate; lobes cut; *umbels* sessile or nearly so, terminal or axillary; *bracteoles* absent; *flowers* greenish-white, small.—Moist places near the sea; not uncommon. The origin of the garden celery, and unmistakably distinguished by its strong flavour and rank odour. In its wild state, or until the leaf-stalks have been blanched by the exclusion of light, it is not eatable.—Fl. June—August. Biennial.



ÁPIUM NODIFLÓRUM (*Procumbent Marsh-wort*).

2. *A. nodiflórum* (Procumbent Marsh-wort).—*Stem* prostrate and rooting, hollow; *leaves* pinnate; *leaflets* ovate, serrate, acute; *umbels* sessile, or nearly so; *rays* unequal; *bracteoles* many, membranous; *flowers* small, white.—Ditches and rivulets; abundant.

Growing with Watercress, this plant is sometimes mistaken for it; but its hollow stem and serrate leaves at once distinguish it, even when not in flower. —Fl. July, August. Perennial.

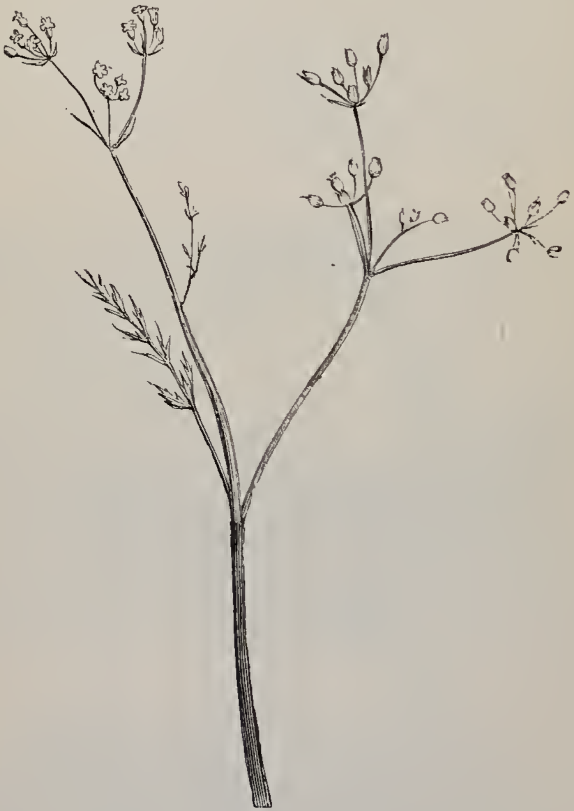
3. *A. inundátum* (Least Marsh-wort).—A small, usually submerged, occasionally creeping plant; *stem* stout, crooked; *submerged leaves* in hair-like segments; *floating leaves* pinnate with wedge-shaped leaflets; *umbels* above water, very small, of 2—4 unequal rays; *flowers* small, white.—Ponds; common.—Fl. June, July. Perennial.

11. Cicúta (Water-Hemlock).—Tall, glabrous plants; *leaves* 2—3-pinnate; *umbels* compound, many-rayed; *bracts* 1—2, very narrow, or none; *bracteoles* several, small, unequal; *sepals* ovate, acute; *petals* white, with an inflexed tip; *fruit* constricted, with two globose carpels. (Name, a Classical Latin name for Hemlock.)

1. *C. virósa* (Water-Hemlock, Cowbane).—*Root* fibrous; *stem* stout, hollow; *lower leaves* long-stalked, 2—3-pinnate; *upper leaves* 2-ternate; *leaflets* lanceolate, 2-serrate; *umbels* large, long-stalked, flat-topped; *flowers* minute, white. — Ponds and ditches; rare. Very poisonous, as are also the species of *Œnánthé*, to which also the name Water-Hemlock is often applied. —Fl. July, August. Perennial.

*12. Ámmi, represented by the one species *A. május*, a glaucous, scentless, and tasteless plant, 6—24 in. high, repeatedly forked with diverging *branches*; pinnate *lower leaves* with obovate, finely serrate leaflets, decompound *upper leaves* with linear segments; and stalked 10—30-rayed *umbels* of white *flowers*, with rough stalks, 3—5-lobed *bracts* with linear segments, and linear *bracteoles*, is only a casual introduction on ballast-heaps and in cornfields.

13. CÁRUM.—Glabrous plants with pinnate or decompound *leaves*; compound *umbels* of white, pink, or yellow *flowers*, with many, few, or no *bracts* and *bracteoles*, and deeply-notched *petals;* and oblong *fruit* with slender ridges. (Name said to be derived from Caria, in Asia Minor.)



CÁRUM SÉGETUM (*Corn Parsley*).

1. *C. verticillátum* (Whorled Caraway).—An erect plant, 1—2 feet high, with *leaves* pinnately divided

into very many hair-like segments and so crowded as to appear whorled; *umbels* flat-topped; *pedicels* slender; *bracts* and *bracteoles* many, short, reflexed; *flowers* white or pink.—Wet meadows, chiefly in the west; rare. Fl. July—August. Perennial.

2.* *C. Petroselinum* (Common Parsley).—A glabrous, shining, erect, much-branched plant; *stem* 1—2 feet high, solid, ribbed; *leaves* tripinnate; *flowers* yellow.—A garden-escape, chiefly found on old walls. —Fl. June—August. Biennial.

2. *C. ségetum* (Corn Parsley).—Well distinguished by its slender, branched *stem*, which is remarkably tough and wiry; its small pinnate *leaves*, of which the lower ones wither early, while the cauline ones are few, small, and inconspicuous; and the irregular, few-rayed *umbels* and small whitish *flowers*.—Cornfields and waste places; not uncommon.—Fl. August, September. Biennial.

4.* *C. Cárvi* (Common Caraway).—*Root* spindle-shaped; *stem* 1—2 feet high, much branched; *leaves* bipinnate, cut into linear lobes; *umbels* rather large and irregular, with rarely more than one *bract*; *flowers* white. The aromatic carpels are the well-known "caraway seeds." It is a naturalised escape from cultivation.—Fl. June, July. Biennial.

5. *C. Bulbocástanum* (Tuberous Caraway).—*Root* black, tuberous, as large as a chestnut; *stem* erect, 1—2 feet high, much branched; *leaves* 2—3-pinnate; *leaflets* cut into few slender lobes; *bracts* and *bracteoles* many, small, narrow; *flowers* white. Chalky fields in Cambridgeshire, Bedfordshire, Hertfordshire, and Buckinghamshire, and so abundant about Baldock, in Hertfordshire, that "the farmers turn their pigs upon the fallows to feed upon the roots." (*Hooker and Arnott.*)—Fl. June, July. Perennial.

14. Síson (Stone Parsley).—Differing from *Cárum* chiefly in having less divided *cauline leaves* and very

short, club-shaped *vittæ*. (Name, the Greek for some allied plant.)

1. *S. Amómum* (Stonewort, Stone Parsley).—A slender plant, much like *Cárum ségetum*, 2—3 feet high, with a wiry, branched *stem*; pinnate or bipinnate *leaves* with narrow *leaflets; umbels* few-rayed, irregular; *bracts* 2—4, subulate; *secondary umbels* small; *bracteoles* 2–4; *flowers* cream-coloured, very small.—Damp places on a chalky soil. The whole plant has a nauseous smell.—Fl. August, September. Biennial.

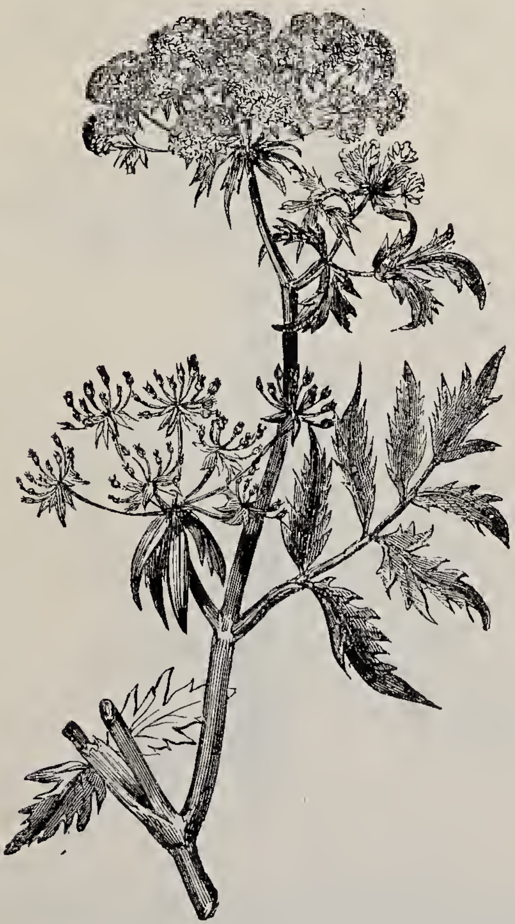
*15. Falcária, represented by *F. vulgáris*, a stout glabrous plant with evenly serrate *leaflets*, resembling *Cicúta virósa*, which occurs as a cornfield casual in Kent and Hampshire. Perennial.

16. Síum (Water-Parsnip). — Glabrous plants; *leaves* pinnate, serrate; *umbels* compound; *bracts* and *bracteoles* many, *flowers* white. (Name said to be connected with a Keltic word *siw*, water.)

1. *S. latifólium* (Broad-leaved Water-Parsnip).—A stout plant, with a furrowed *stem*, 3—5 feet high; pinnate *leaves* of 5—13 large, distant, lanceolate, acute, evenly serrate *leaflets*; and large, flat-topped, many-rayed *umbels* of small white *flowers*, with large leafy lanceolate *bracts* and *bracteoles*.—Watery places; not common.—Fl. July, August. Perennial.

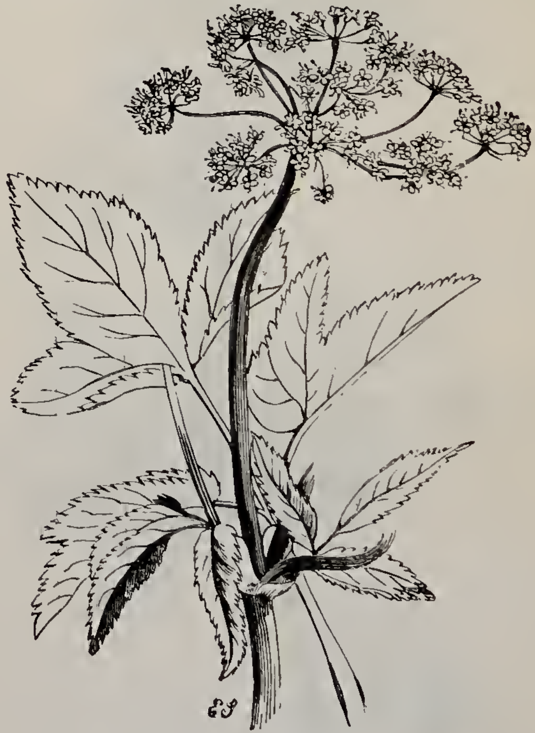
2. *S. eréctum* (Narrow-leaved Water-Parsnip).—Smaller than the last, and resembling *Ápium nodiflórum*, from which it may be distinguished by its very irregularly serrate *cauline leaves*, its *umbels*, which are not only opposite the leaves, but also stalked and larger, and its reflexed, and often cut, *bracts* and *bracteoles*.—Watery places; common.—Fl. August. Perennial.

17. Ægopódium (Gout-weed).—Glabrous; *leaves* 2—3-ternate, with broad *leaflets*; *umbels* compound, many rayed; *bracts* and *bracteoles* few or none; *flowers* white. (Name from the Greek *aix*, a goat, *pous*, a foot, from some fancied resemblance of the leaves.)



Síum eréctum (*Narrow-leaved Water-Parsnip*).

1. *Æ. Podagrária* (Gout-weed, Bishop's-weed, Herb Gerard.)—*Rhizome* creeping, white, pungent, aromatic ; *stem* about a foot high, hollow, furrowed ; *leaves* mostly radical, large, 2—3-ternate ; *leaflets* oblique, serrate.—A common and very troublesome weed in shrubberies. The leaves used formerly to be boiled for food ; but their flavour is strong and disagreeable.—Fl. May—July. Perennial.

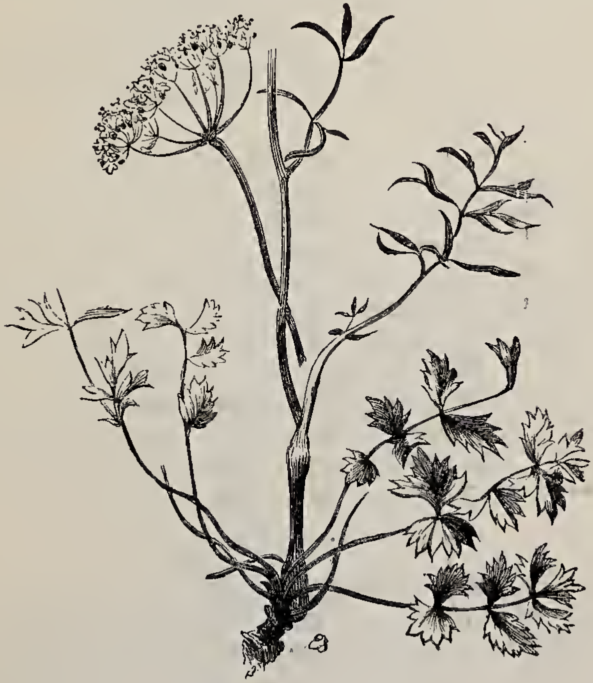


ÆGOPÓDIUM PODAGRÁRIA (*Common Gout-weed*).

18. PIMPINÉLLA (Burnet Saxifrage).—*Leaves* pinnate ; *umbels* compound ; *bracts* none, or rarely one ;

flowers generally white; *fruit* oblong, crowned with the swollen bases of the reflexed styles. (Name said to be from the Latin *bipennula*, in allusion to the bipinnate leaves.

1. *P. Saxífraga* (Common Burnet Saxifrage).—A slender plant, 1—2 feet high; *stem* round; *lower* *leaves* long-stalked, pinnate; *leaflets* orbicular, sharply cut; *cauline leaves* bipinnate, with linear acute segments.—Dry pastures; common.—Fl. July—September. Perennial.



PIMPINÉLLA SAXÍFRAGA (*Common Burnet Saxifrage*).

2. *P. májor* (Greater Burnet Saxifrage).—Stouter and larger than the last; *stem* angular; *leaves* all

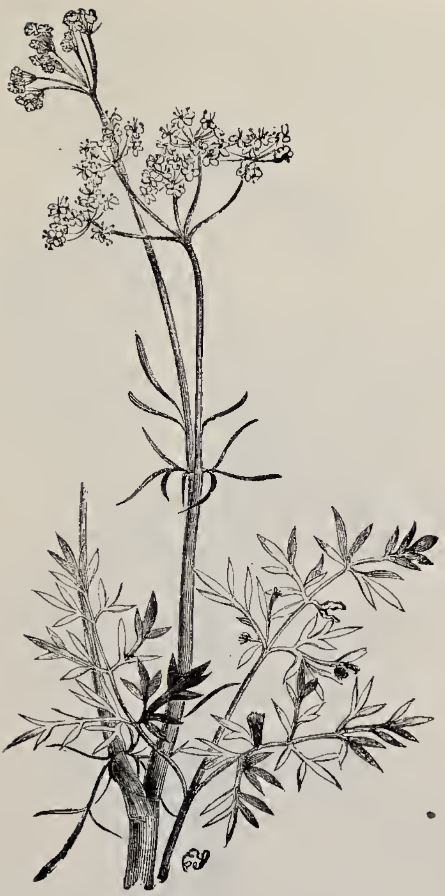
pinnate; *leaflets* ovate serrate, the terminal one 3-lobed.—Shady places; not common.—Fl. July, August. Perennial.

19. CONOPÓDIUM (Pig-nut).—Glabrous plants with a tuberous underground *stem*; triternate *leaves*; *umbels* compound, many-rayed; *bracts* absent; *bracteoles* few; *flowers* white; *fruit* oblong, crowned with the conical base of the erect *styles*. (Name from the Greek *kónos*, a cone, *pous*, a foot, from the conical epigynous disk.

1. *C. denudátum* (Common Pig-nut).—A very slender plant, about a foot high, bearing a few finely-divided, 3-ternate *leaves* and terminal *umbels* of white *flowers*. The *tuber*, which resembles a small potato in shape, and is covered by a thin, easily removable, brown skin, is eatable, but only fit for the food of the animal after which it is named. The plant much resembles *Cárum Bulbocástanum*, but differs in its brown, not black, tuber, its smaller size, ternate, not pinnate leaves, fewer or absent bracts and bracteoles, large disk and erect styles.—Sandy pastures; common.—Fl. May, June. Perennial.

20. MÝRRHIS (Cicely).—Downy; *leaves* decompound; *umbels* compound, many-rayed; *bracts* absent; *bracteoles* many, membranous; *flowers* white; *fruit* long, contracted at the sides with a deep furrow between the carpels; *ridges* sharp, prominent, almost winged. (Name from the Greek *murrha*, myrrh, from the fragrance of the leaves.)

1. *M. odoráta* (Sweet Cicely).—Stem 2—3 feet high, furrowed and hollow; *leaves* large, tripinnate, cut, slightly downy; *umbels* terminal, downy; *bracteoles* whitish, ciliate; *flowers* white; *fruit* remarkably large, an inch long, becoming dark brown.—Moun-

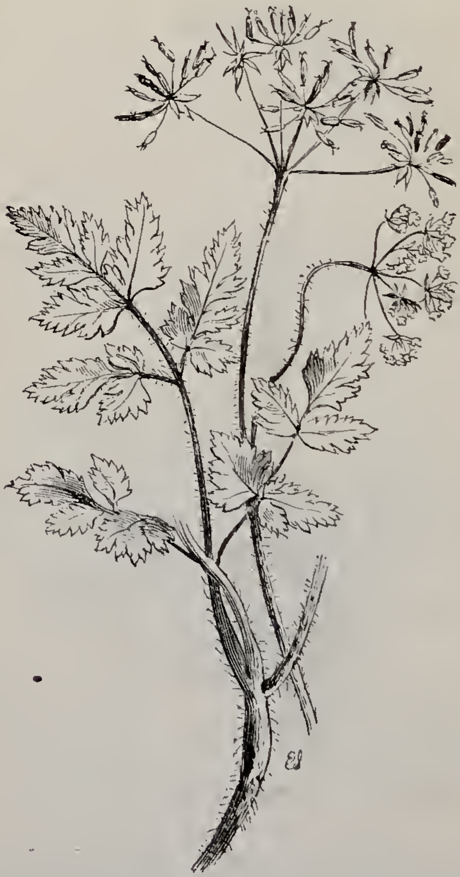


CONOPÓDIUM DENUDÁTUM (*Common Pig-nut*).

tain pastures in the north. Remarkable for the sweet and highly-aromatic flavour of the leaves and fruit.—Fl. May, June. Perennial.

21. CHÆROPHÝLLUM (Chervil).—Hairy plants; *leaves* decompound; *umbels* compound, many-rayed;

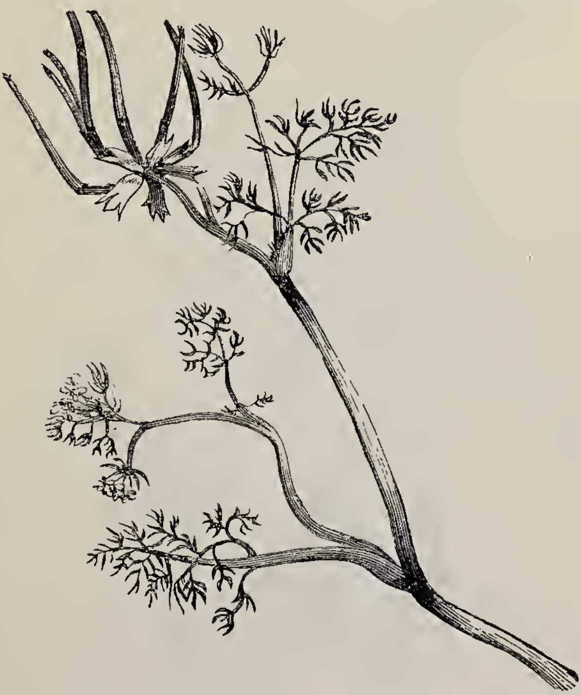
bracts absent or very few; *bracteoles* several; *flowers* usually white; *fruit* shortly beaked, contracted at the sides; *ridges* blunt. (Name from the Greek *chairo,* I rejoice, and *phullon,* a leaf, from the agreeable odour of the leaves in some species.)



CHÆROPHÝLLUM TÉMULUM (*Rough Chervil*).

1. *C. témulum* (Rough Chervil).—The only British

species; *stem* slender, 2—3 feet high, rough with short hairs, spotted with purple, and swollen below the nodes; *leaves* bipinnate, deeply lobed and cut, hairy, often making the plant conspicuous in autumn by their rich purple hue; *umbels* terminal, drooping when in bud; *bracts* absent or very few; *bracteoles* several, fringed and deflexed; *flowers* white.—Woods and hedges; very common.—Fl. June, July. Perennial.



SCÁNDIX PÉCTEN VÉNERIS (*Shepherd's Needle, Venus' Comb*).

22. SCÁNDIX (Shepherd's Needle).—Herbs with pinnately decompound *leaves*, no *bracts*, several *brac*

teoles, petals white and often unequal, and *fruit* produced into a very long slender beak. (Name, the Greek name for some allied plant.)

1. *S. Pécten-Véneris* (Shepherd's Needle, Venus' Comb).—A small plant, 3—9 in. high, with finely-cut bright-green *leaves;* few-rayed umbels of small white *flowers ;* and long, beaked *fruits.*—A weed in cultivated ground ; common. But for the ovary being

ANTHRÍSCUS SYLVÉSTRIS (*Wild Beaked-Parsley*).

inferior, this plant might be mistaken for an *Eródium*. —Fl. June—September. Annual.

23. Anthríscus (Beaked Parsley).—Hairy plants with decompound *leaves*; compound *umbels*, nodding in bud; *bracts* 1, 2, or none; *bracteoles* many, entire; *petals* white, with an inflexed tip; *fruit* short, shortly beaked; *ridges* obscure. (Name, the Greek name of this or some allied plant.)

1. *A. vulgáris* (Common Beaked Parsley).—*Stem* 2—3 feet high, smooth, polished, slightly swollen at the nodes; *leaves* 3-pinnate, with blunt segments, slightly hairy beneath; *umbels* lateral, on rather short stalks, opposite the leaves; *bracts* absent; *bracteoles* 5 or 6, with fringed edges; *fruit* bristly with hooked bristles.—Waste places; common.—Fl. May, June. Annual.

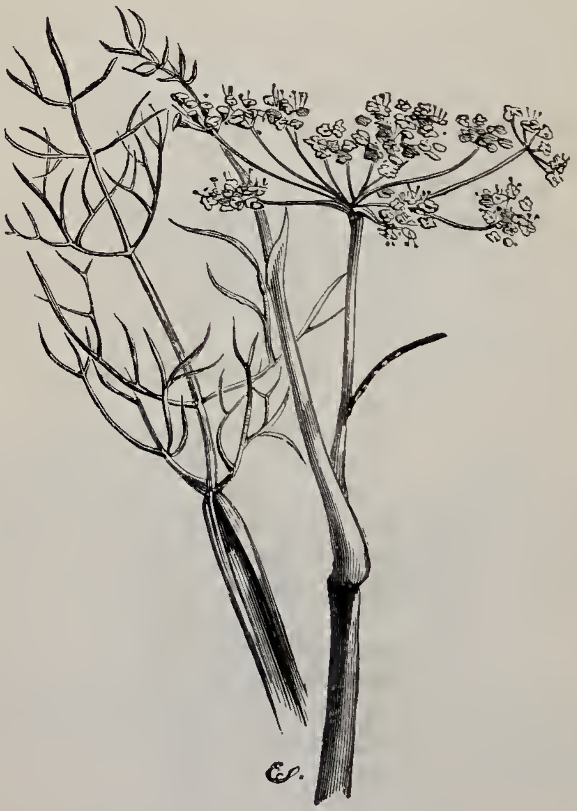
2. *A. sylvéstris* (Wild Beaked Parsley or Chervil). —*Stem* slightly downy below, smooth above; *leaves* 3-pinnate, coarsely serrate; *umbels* terminal on long stalks; *bracts* absent; *bracteoles* about 5, ovate-lanceolate, fringed; *fruit* smooth.—Hedges; common. One of our early spring flowers.—Fl. April—June. Perennial.

3.* *A. Cerefólium* (Garden Chervil), is not a native plant, though sometimes found near gardens. It may be distinguished from the preceding by having only 3 *bracteoles*, lateral sessile *umbels*, and smooth *fruit*.—Fl. May, June. Annual.

24. Séseli (Meadow Saxifrage).—Erect branched plants; *leaves* 2—3- or more-pinnate; *umbels* compound; *bracts* and *bracteoles* many, entire; *flowers* white; *sepals* acute; *fruit* short, with no beak or bristles and blunt ridges. (Name of Greek origin.)

1. *S. Libanótis* (Mountain Meadow Saxifrage).—

A stout plant, 1—2 feet high, with a solid, furrowed *stem*; bipinnate *leaves*; hemispherical *umbels*; hairy *fruit*; and persistent, reflexed *styles*.—Chalk-hills, Cambridgeshire, Hertfordshire, and Sussex.—Fl. July, August. Perennial.



FŒNÍCULUM VULGÁRÉ (*Common Fennel*).

25. Fœnículum (Fennel).—Tall, smooth plants, with decompound, pinnate *leaves* with very narrow

segments; ebracteate, compound *umbels* of yellow *flowers* with roundish entire *petals* with a short, blunt, inflexed tip. (Name, a diminutive from the Latin *fœnum*, hay, to which it has been compared in smell.)

1. *F. vulgáré* (Common Fennel).—A well-known plant, with an erect *stem*, numerous *leaves*, deeply divided into soft, hair-like segments, and large terminal *umbels* of yellow *flowers*.—Waste places, especially near the sea. The whole plant is aromatic, and the chopped leaves are used in sauce for fish.—Fl. July, August. Perennial.

CRÍTHMUM MARÍTIMUM (*Rock Samphire*).

26. **Críthmum** (Samphire).—A smooth, fleshy, much-branched plant, with 2—3-ternate *leaves ;* compound, many-rayed *umbels* of minute white *flowers ;* and short, smooth *fruit* with many *vittæ* and loose *seeds.* (Name said to be from the Greek *crithé*, barley, from a fancied resemblance in the fruit.)

1. *C. marítimum* (Rock Samphire).—Well distinguished by its long, glaucous, fleshy *leaflets.* —Rocks by the sea. It has a powerful aromatic scent. The young leaves, if gathered in May, make, when sprinkled with salt and preserved in vinegar, one of the best of pickles. On those parts of the coast where Samphire does not occur, other fleshy-leaved plants, especially *Salicórnia herbácea*, are sometimes sold under the same name.—Fl. July, August. Perennial.

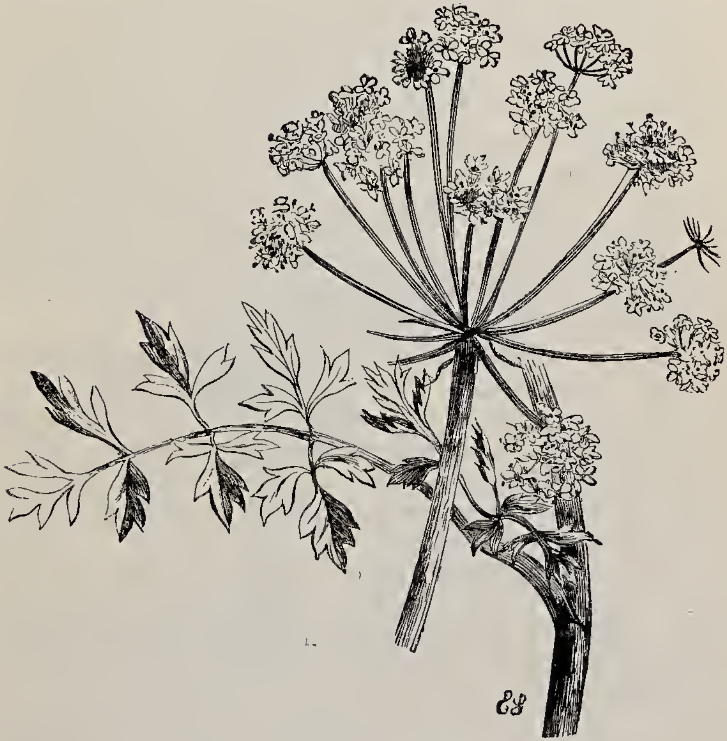
27. **Œnánthé** (Water-Dropwort).—Smooth plants, mostly aquatic ; *leaves* 1—3-pinnate ; *umbels* compound ; *flowers* white, the outer ones being often irregular and staminate ; *fruit* surrounded by the corky lateral *ridges*, and crowned with the long erect *styles.* (Name from the Greek *oinos*, wine, *anthos*, a flower, from the wine-like smell of the blossoms.)

1. *Œ. fistulósa* (Common Water-Dropwort).—*Root* of many fleshy fibres ; *stem* sending out runners, hollow, thin-walled, smooth ; *leaf-stalks* hollow ; *lower leaves* submerged, 2—3-pinnate, with flat leaflets ; *upper leaves* pinnate, hollow, with distant, thread-like segments ; *umbels* small, few-rayed, ebracteate, globose in fruit, on hollow peduncles.—Ditches and marshes ; frequent.—Fl. July—September. Perennial.

2. *Œ. pimpinellóïdes* (Callous-fruited Water-Dropwort).—*Root-fibres* tuberous ; *stem* furrowed ; *radical leaves* bipinnate ; *uppermost leaves* reduced to hollow stalks ; *umbels* 6—12-rayed, compact, flat-topped, with

many linear *bracts ; fruit* with a swollen, corky base. —Pastures in the south; rare.—Fl. June—August. Perennial.

3. *Œ. silaifólia* (Sulphur-wort Water-Dropwort). —A larger, stouter plant; *root-fibres* fusiform; *leaves* bipinnate with linear, acute leaflets; fewer-rayed, less crowded *umbels*, with no *bracts*, but numerous *bracteoles ; fruit* much as in the last, but those in the middle of the umbel without the corky base.—Marshes, chiefly in the south-east.—Fl. June, July. Perennial.



ŒNÁNTHE CROCÁTA (*Hemlock Water-Dropwort*).

4. *Œ. Lachenálii* (Parsley Water-Dropwort).—*Root-fibres* fleshy, but not tuberous; *radical leaves* bi-pinnate, bluntly lobed, soon withering; *cauline leaves* with linear acute leaflets; *secondary umbels* distinct, spherical; *fruit* without a corky base.—Marshes; common.—Fl. July—September. Perennial.

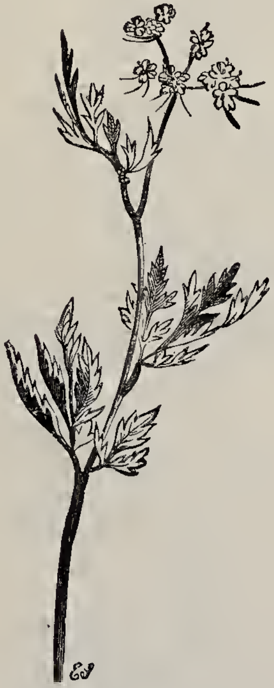
5. *Œ. crocáta* (Hemlock Water-Dropwort).—A large, stout plant, 3—5 feet high, with large clustered tuberous *roots*, somewhat like those of the Dahlia; *leaves* spreading, 3-pinnate, with sheathing petioles and stalked, variously cut, glossy *leaflets;* and large, many-rayed *umbels* with long pedicels.—Watery places; common. This plant, which is often known as *Water-Hemlock*, and is sometimes mistaken for Celery, is very poisonous, and should not be allowed to grow in places where cattle are kept, as cows have often been poisoned by eating the roots.—Fl. July. Perennial.

6. *Œ. Phellándrium* (Fine-leaved Water-Dropwort, Horsebane).—*Root* of whorled fibres; *stem* erect, 2—3 feet high, very thick at its base, with runners; *leaves* 3-pinnate, the lower ones submerged with diverging, hair-like segments; *umbels* lateral, sub-sessile.—Ditches and ponds; frequent.—Fl. July—September. Biennial.

7. *Œ. fluviátilis* (River Water-Dropwort). — A floating form, with 2-pinnate *leaves*, the submerged ones pellucid with parallel, many-veined *leaflets.*—In running water, in the south.—Fl. July—September. Biennial.

28. Æthúsa (Fool's Parsley).—A smooth, leafy annual, distinguished by having a *bract* and 1—5 *bracteoles* drooping and all on the outer side of the umbel, a globose *fruit* with sharp *ridges* and reflexed *styles.* (Name from the Greek *aitho*, I burn, from its acrid character.)

1. *Æ. Cynápium* (Fool's Parsley).—A slender plant, about a foot high, with dark green, 2-pinnate *leaves* and terminal *umbels* of white *flowers*, with 3 very long, narrow *bracteoles* hanging down on the outer side of each secondary umbel.—An evil-smelling, poisonous, but common garden weed.—Fl. July, August. Annual.



ÆTHÚSA CYNÁPIUM (*Fool's Parsley*).

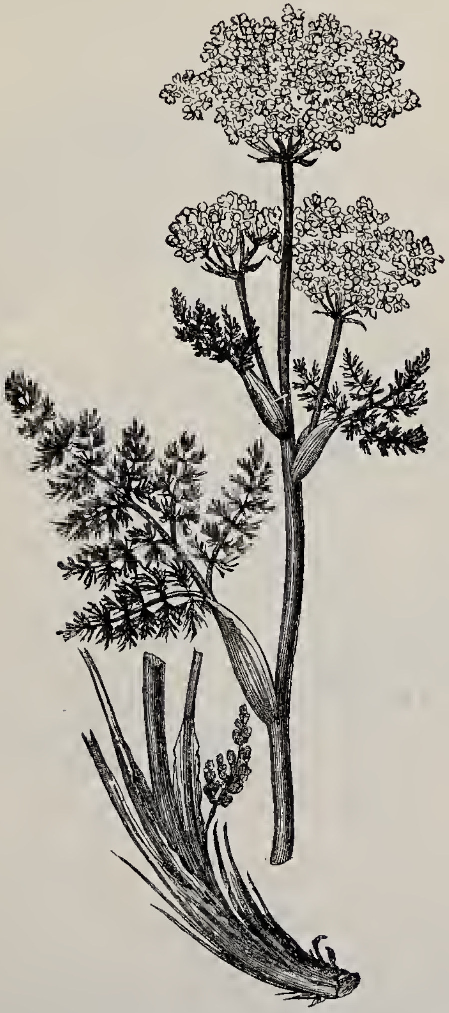
*29. Siler is represented by *S. trílobum*, with long-stalked, 3-ternate smooth *radical leaves ;* ternate *cauline leaves ;* large terminal bracteate *umbels ;* and large compressed *fruits* with one vitta under each secondary ridge, which is naturalised at Cherry Hinton, Cambridgeshire.

30. Siláus (Pepper Saxifrage).—Glabrous plants; *leaves* pinnately decompound; *umbels* compound; *bracts* 1, 2, or none; *bracteoles* many; *flowers* yellowish; *fruit* ovoid, with slightly winged *ridges*. (Name, the Latin name of some allied plant.)

1. *S. flavéscens* (Pepper Saxifrage, Sulphur-wort).—*Stem* angular, 1—2 feet high; *leaves* 3-pinnate, with narrow opposite *leaflets*; *umbels* terminal; *flowers* dull, pale yellow, small; *fruit* dark brown.—Meadows; frequent. — "The whole plant being fœtid when bruised, is supposed in some parts of Norfolk to give a bad flavour to milk and butter." (*Sir J. E. Smith.*) —Fl. June—September. Perennial.

31. Méum (Spīgnel).—A smooth, aromatic plant; *leaves* pinnately decompound with crowded bristle-like segments; *umbels* compound, bracteate; *bracts* linear; *flowers* yellowish; *petals* narrowed at both ends, inflexed. (Name, the Greek for this or some allied plant.)

1. *M. Athamánticum* (Spignel, Meu, or Baldmoney).—Well distinguished by its bipinnate *leaves* cut into numerous crowded, acute, bristle-like segments.—Dry mountainous pastures in the north. The whole plant, and especially the root, which is eaten by the Highlanders, is highly aromatic, with a flavour like Melilot, which it communicates to milk and butter when the cows feed on its leaves in spring—"Bald, or Bald-Money, is a corruption of *Balder*, the *Apollo* of the Northern nations, to whom this plant was dedicated." (*Sir W. J. Hooker.*)—Fl. June, July. Perennial.



MÉUM ATHAMÁNTICUM (*Spignel, Meu, or Bald-Money*).

32. Ligústicum (Lovage).—Smooth plants; *leaves* 1—3-ternately pinnate; *umbels* compound, bracteate; *petals* white or pink, notched, with a short claw and long inflexed tip; *fruit* short, somewhat winged; *seeds* loose. (Named from *Liguria*, the native country of a cultivated species.)

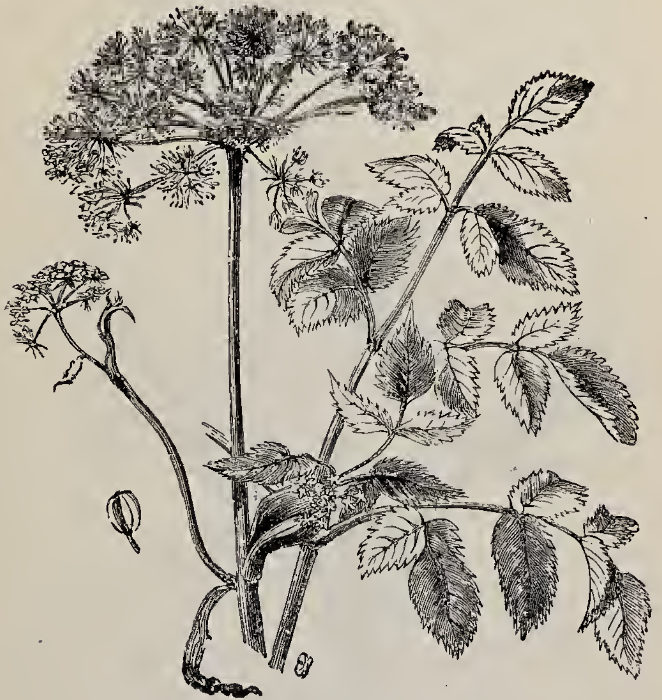
1. *L. scóticum* (Scottish Lovage). — *Stem* little branched, about 1½ feet high, tinged with red; *leaves* dark green, glossy, biternate with large, broad, serrate *leaflets*; *flowers* reddish-white, with both *bracts* and *bracteoles*.—Rocky coasts in Scotland and Northumberland.—Fl. July. Perennial.

33. Selínum.—*Leaves* bipinnate; *leaflets* pinnatifid; *umbel* compound, many-rayed; *bracts* absent; *bracteoles* many, subulate; *flowers* white; *fruit* 10-winged; *lateral ridges* broadest, diverging; *vittæ* solitary. (Name from the Greek *selínon*, parsley.)

1. *S. Carvifólia* (False Milk Parsley)—*Root-fibres* stout, fusiform; *stem* erect, solid, 2—4 feet high, angular, furrowed; *lower leaves* with short sheath and very long, channelled stalk, dull, dark green, greyer beneath; *leaflets* finely serrate, with a bristly apex; *umbels* terminal, large, compact, 20—30-rayed, flat-topped; *bracts* absent or 1.—Moist, shady places, Lincolnshire and Cambridgeshire. Resembling *Peucédanum palústré*, the Milk Parsley. — Fl. July, August. Perennial.

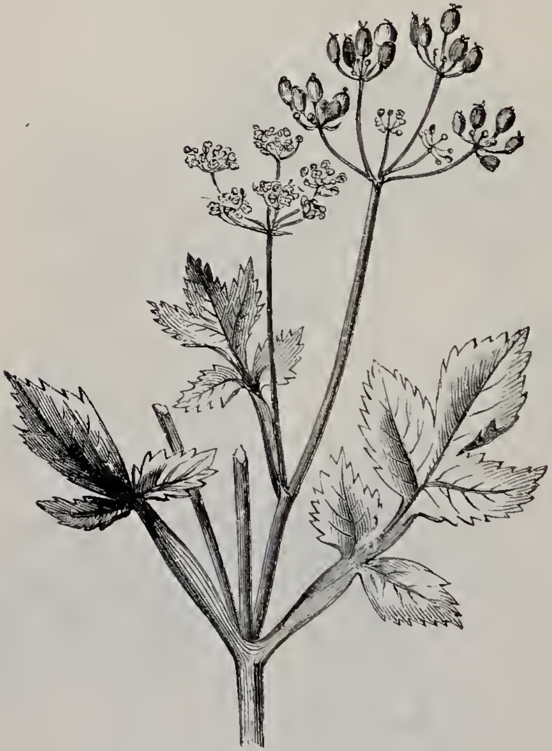
34. Angélica. — Tall plants, with ternately bipinnate *leaves* with large segments; *umbels* compound, many-rayed; *bracts* few or none; *bracteoles* many, small; *sepals* indistinguishable; *petals* white; *lateral ridges* with membranous, parallel, thin wings; *vittæ* solitary or 2 together. (Name from its *angelic* medicinal properties.)

1. *A. sylvéstris* (Wild Angélica).—A tall, stout plant, 2—4 feet high; *stem* furrowed; slightly downy, especially above, tinged with purple; *leaves* bipinnate; *leaflets* stalked, obliquely ovate, serrate; *umbels* large, with *bracts* and *bracteoles*; *flowers* white, tinged with pink.—Wet places; common.—Fl. July, August. Perennial.



ANGÉLICA SYLVÉSTRIS (*Wild Angelica*).

*35. ARCHANGÉLICA, differing from *Angélica* mainly in having minute *sepals*, thicker dorsal and intermediate *ridges*, no *vittæ*, and loose *seeds*, is represented by *A. officinális*, a larger plant than *Angélica sylvéstris*, with *leaves* 2—3 feet across, decurrent *leaflets* and greenish-white *flowers*, cultivated for the sake of its aromatic stems (which are candied as a sweetmeat), and occurring only as an escape.—Fl. July—September. Perennial.



PEUCÉDANUM SATÍVUM (*Common Parsnip*).

36. PEUCÉDANUM (Hog's-Fennel).—*Leaves* pinnate or ternate; *umbels* compound, many-rayed; *bracts* and *bracteoles* absent, few or many; *sepals* small or incon-

spicuous; *petals* yellow or white; *fruit* flattened; *lateral ridges* forming thin flat contiguous parallel wings; *vittæ* linear, as long as the fruit. (Name of Greek origin.)

1. *P. officinálé* (Sulphur-wort, Sea Hog's-Fennel).—Smooth; *stem* 2—3 feet high, round, ribbed; *leaves* 3—5 ternate; *leaflets* long, linear, flaccid; *umbels* large, on diverging branches, many-rayed; *bracts* few, deciduous; *flowers* minute, yellow.—Salt marshes in Kent and Essex; very rare.—Fl. July—September. Perennial.

2. *P. palústré* (Milk Parsley, Marsh Hog's-Fennel).—Smooth, with abundant milky juice, drying to a brown resin; *stem* 3—5 feet high, furrowed, hollow; *leaves* 3-pinnate; *leaflets* pinnatifid with narrow acuminate segments; *bracts* many, deflexed, persistent; *flowers* white.—Marshes, chiefly in the south and east; rare.—Fl. July, August. Perennial.

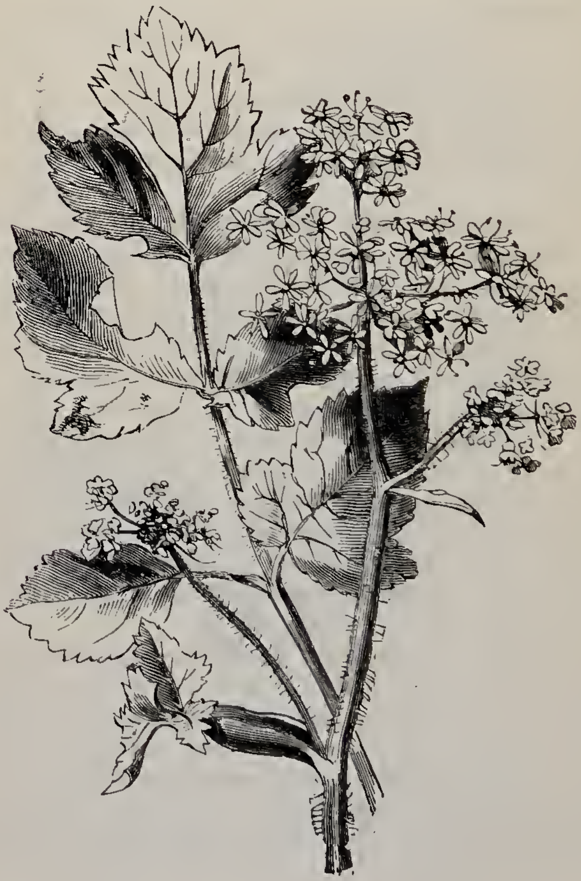
3.* *P. Ostrúthium* (Masterwort).—A smooth, stout plant, 1—3 feet high; *stem* round, furrowed, hollow; *leaves* long-stalked, biternate; *leaflets* few, large, broadly-ovate, cut and toothed; *umbels* large; *bracts* absent; *flowers* white.—Moist meadows in the north; rare. Formerly cultivated and now only an escape.—Fl. June—August. Perennial.

4. *P. satívum* (Common Parsnip).—A downy erect plant, 2—3 feet high, with tap *root; stem* angular, hollow; *leaves* pinnate, glossy, downy beneath; *leaflets* 5—11, sessile, ovate, serrate; *umbels* terminal, ebracteate; *flowers* small, bright yellow.—Banks on calcareous soil; not uncommon. Differing from the cultivated form chiefly in its smaller root.—Fl. July, August. Biennial.

37. HERÁCLEUM (Cow-Parsnip).—Large plants; *leaves* 1—3-pinnate; *leaflets* broad, lobed; *umbels* compound, many-rayed; *bracts* deciduous; *flowers* white

or pink, the outer ones irregular ; *fruit* as in *Peucédanum*, but with short, club-shaped *vittæ*. (Named after the hero Heracles.)

1. *H. Sphondýlium* (Common Cow-Parsnip, Hog-weed).—A very tall and stout plant, with a channelled hairy *stem*, 4—6 feet high ; large, irregularly cut, rough *leaves ;* and spreading *umbels* of conspicuous



HERÁCLEUM SPHONDÝLIUM (*Common Cow-Parsnip, Hog-weed.*)

white *flowers.*—Hedgerows; common. In spring the plant is remarkable for the large pale oval tufts formed by the sheathing bases of the cauline leaves distended with the flower-buds. In the outer flowers the symmetric enlargement of one deeply 2-lobed and inflexed petal, and the unsymmetric modification of those on either side of it, should be noticed. This, like many other Umbelliferæ, is often confounded by farmers with the poisonous Hemlock; but cattle eat it with impunity.—Fl. July. Perennial.

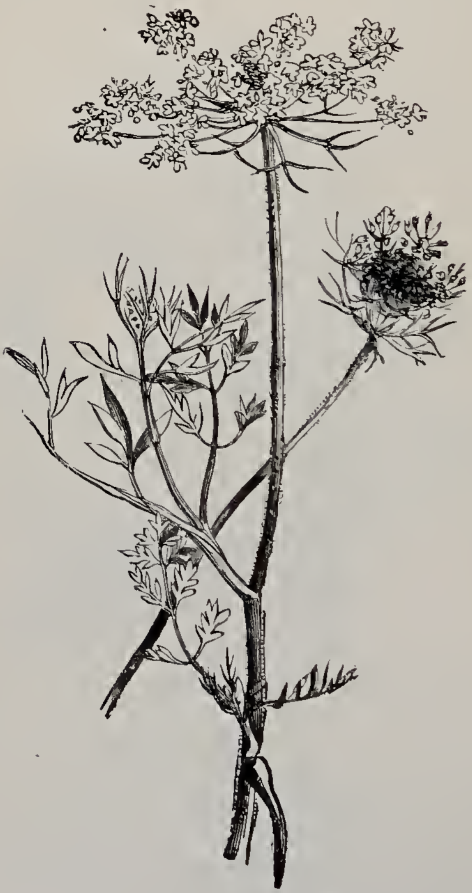
A gigantic handsome Siberian species, *H. gigánteum*, is commonly grown in shrubberies, and may occur as an escape.

*38. Tordýlium (Hartwort).—Hairy annuals with pinnate *leaves*, linear *bracteoles* and thick wings to the *fruit* formed by the *lateral ridges*, is represented by *T. máximum*, a slender hispid plant with reflexed hairs and small, 6—8-rayed *umbels* of pink *flowers*, which occurs in waste places at Oxford, Eton, and Isleworth; but is not native.—Fl. June, July. Annual.

*39. Coriándrum (Coriander), also slender annuals, but glabrous, with pinnately decompound *leaves*, few-rayed compound *umbels* with no *bracts*, few thread-like *bracteoles*, *petals* often irregular, and very globose, slightly ridged *fruit*, is represented by *C. satívum*, an occasional escape from cultivation in the south and east. The name is derived from the Greek *koris*, a bug, from the fœtid smell of the plant; but the pleasantly aromatic fruit is considerably used in confectionery.—Fl. June. Annual.

40. Daúcus (Carrot).—Hispid plants; *leaves* pinnately decompound; *umbels* compound, many-rayed,

the outer arching over the inner when in fruit ; *bracts* and *bracteoles* usually many, pinnatifid ; *fruit* with 8 rows of prickles, one row on each secondary ridge. (Name, the Greek name of the plant.)



DAÜCUS CARÓTA (*Wild Carrot*).

1. *D. Caróta* (Wild Carrot).—A tough, erect, bristly plant, with much-cut *leaves* and large con-

cave *umbels* of dull white *flowers*, the central *flower* or *secondary umbel* deep red, in scent and flavour resembling the Garden Carrot.—Fields ; common.—Fl. June—August. Biennial.

2. *D. gúmmifer* (Seaside Carrot).—Differs in being more prostrate, rather fleshy, and having the *umbel* convex when in fruit.—Sea-shores in the south; rare. —Fl. July, August. Biennial.

41. Caúcalis (Bur-Parsley).—Hispid plants; *leaves* 1—3-pinnate; *umbels* compound, or rarely simple, usually few-rayed: *bracts* few or none; *bracteoles* many; *fruit* with 1—3 rows of prickles on each *primary* and *secondary ridge*. (Name, the Greek name of the plant.)

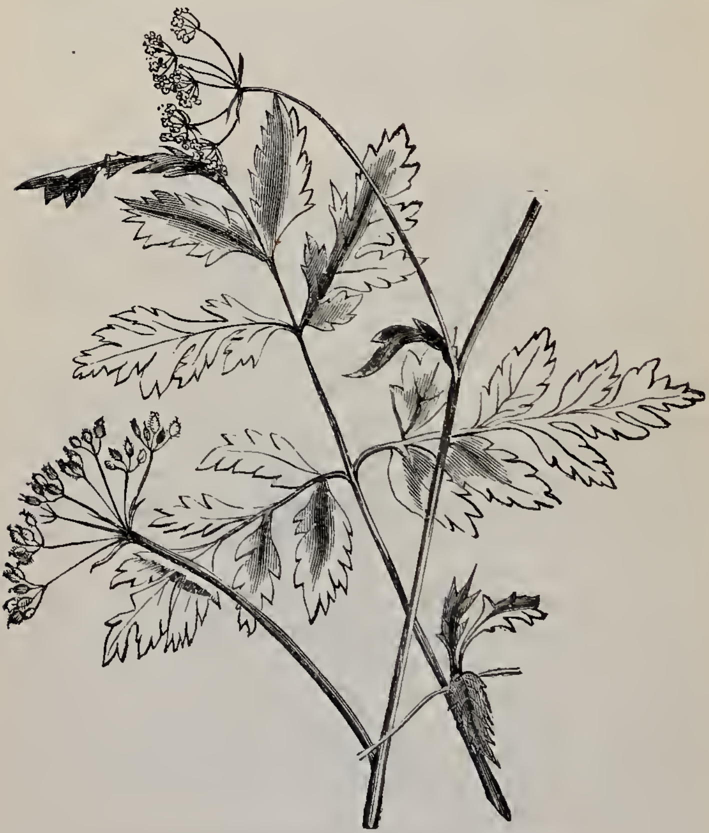
1.* *C. latifólia* (Great Bur-Parsley).—*Stem* 1—2 feet high, rough; *leaves* pinnate; *leaflets* lanceolate, serrate, decurrent; *umbels* 2—4-rayed; *secondary umbels* 4—6-rayed; *flowers* large, rose-coloured; *fruit* large, oblong, very prickly, with 2—3 rows of recurved prickles on each *secondary ridge*.—Cornfields, especially on calcareous soil; very rare, not native.—Fl. July. Annual.

2. *C. daucóides* (Small Bur-Parsley).—A somewhat bushy plant; *stem* deeply furrowed, hairy at the nodes; *leaves* 2—3 pinnate; *umbels* terminal and lateral, of about 3 rays, without bracts; *secondary umbels* of about 3 rays, with bracteoles; *flowers* small, pinkish; *fruit* large, with one row of prickles on each *secondary ridge*.—Chalky fields; not common.—Fl. June, July.—Annual.

3. *C. arvénsis* (Spreading Hedge-Parsley).—A hispid, much-branched plant, 6—18 in. high; *leaves* bipinnate; *leaflets* ovate-lanceolate, cut and toothed; *umbels* compound, long-stalked, terminal, 2—8-rayed; *bracts* 1 or none; *bracteoles* linear; *flowers* white or pink; *fruit* covered with spread-

ing hooked bristles.—Hedges; common.—Fl. July, August. Annual.

4. *C. Anthríscus* (Upright Hedge-Parsley).—A tall, slender plant, 2—3 feet high, with a solid rough



CAÚCALIS ANTHRÍSCUS (*Upright Hedge-Parsley*).

stem; hairy, bipinnate *leaves;* ovate-oblong, cut and toothed *leaflets;* long-stalked terminal 5—12-rayed *umbels* with several *bracts* and *bracteoles; flowers* small, white or pinkish; *fruit* covered with incurved, not hooked, bristles.—Hedges; abundant.—Fl. July, August. Annual.

5. *C. nodósa* (Knotted Hedge-Parsley).—Well distinguished from all other British umbelliferous plants by its prostrate *stem*, its very small, almost globular, simple, lateral, and nearly sessile *umbels* of small pinkish-white *flowers*, and by the outer *fruits* in each umbel being covered with hooked bristles, while the inner are warty.—Fl. May—July. Annual.

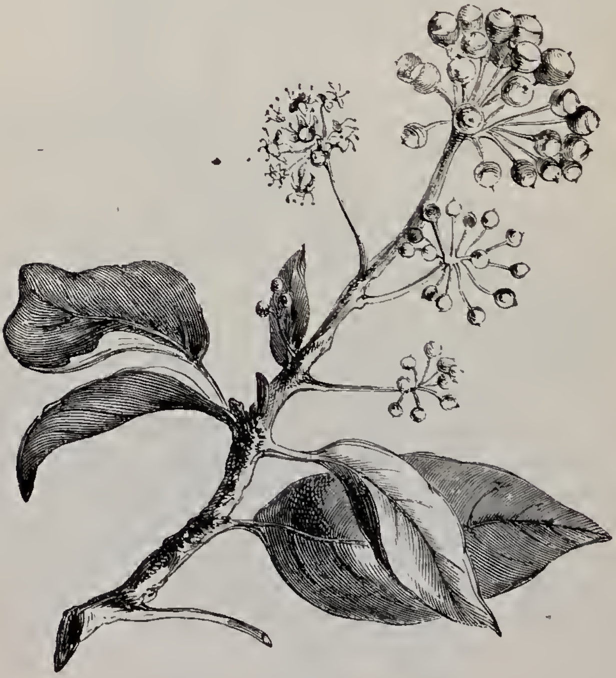
ORD. XXXV. ARALIÁCEÆ.—THE IVY FAMILY.

Shrubs or trees, often downy with stellate hairs, chiefly tropical, and closely resembling the Umbelliferæ in the structure of their flowers, though not partaking of their dangerous properties. *Calyx* superior, 5-cleft; *petals* 5—10; *stamens*, 5—10, epigynous; *ovary* 2- or more-chambered, with *styles* as many as the chambers, and 1 ovule in each chamber; *fruit* generally a berry. Only one species is a native of Britain; but this one, the Ivy, is so universally diffused as to be familiar to everyone. *Ginseng*, the favourite medicine of the Chinese, is the root of *Panax Ginseng*, a member of this Order; and their celebrated *Rice-paper* is the pith of *Fátsia papyrífera*, a native of Formosa, also belonging to the Araliáceæ.

1. HÉDERA (Ivy).—Climbing shrubs; *leaves* exstipulate, simple, scattered; *flowers* in simple umbels, 5-merous, polysymmetric; *berry* 5-chambered, 5-seeded, with a parchment-like endocarp lining each chamber; *albumen* ruminate. (Name, the Classical Latin name of the plant.)

1. *H. Hélix* (Common Ivy).—A woody plant with

a *stem* sometimes 10 inches in diameter, trailing or climbing by adventitious simple rootlets; *leaves* evergreen, leathery, dark green, glossy, and distinctly veined above, 5-lobed on the climbing stem, ovate and undivided on the free upper branches; *umbels* confined to the upper free branches, globose, simple, downy with stellate hairs; *flowers* greenish-yellow; *berries* black; *endocarp* lilac.—Banks, woods, rocks, and old walls; general.—Fl. October, November. Perennial.



HÉDERA HÉLIX (*Common Ivy*).

ORD. XXXVI. CORNÁCEÆ.—THE DOGWOOD FAMILY.

A small order, mostly shrubs or trees, inhabiting the temperate regions of the Northern Hemisphere. They have mostly exstipulate, opposite, simple *leaves*, small, polysymmetric *flowers*, which are generally tetramerous, and 1—4-chambered berry-like fruit, with stony endocarps; *sepals* 4, superior, valvate; *petals* 4—5, epigynous; *stamens* 4—5, epigynous; *style* single, thread-like; *stigma* simple or lobed. The Order contains few plants of interest. The evergreen known as the Spotted Laurel (*Aúcuba japónica*), now common in our gardens, is a member of the Order. The spots are a disease which is only slightly transmitted by seed; but the plant, being diœcious, is largely multiplied by layers. The staminate plant is now grown separately, or it can be grafted on the pistillate shrub, so that the red berries are now commonly produced. *Benthámia fragífera*, a handsome shrub from the mountains of Nipal, was introduced into Cornwall in 1825, and, flowering and fruiting freely, is a pleasing addition to the shrubbery. *Córnus flórida*, the American Dogwood, a native of the United States, furnishes a wood useful for turnery and engraving, and the bark of this and other species is used as a substitute for quinine. The *Córnus* of the ancients was the Cornelian Cherry, *Córnus máscula*, whose little clusters of yellow starry flowers are among the earliest heralds of spring. Its fruit is like a small plum, with a very austere flesh, but after keeping it becomes pleasantly acid. The Turks still use it in the manufacture of sherbet, and the bark of the same species furnishes the red dye for their fez. Two species of *Córnus* are the only British representatives of the Order.

1. Córnus (Cornel).—Herbs, shrubs, or trees; *leaves* usually opposite; *flowers* small, white or yellow; *petals* valvate; *ovary* 2-chambered. (Name from the Latin, referring to the horny hardness of the wood.)

1. *C. suécica* (Dwarf Cornel).—Herbaceous; *rhizome* woody, creeping; *stems* annual, erect, about 6 in. high, slender; *leaves* opposite, decussate, ovate; *flowers* in a terminal umbel, minute, dark purple; *bracts* 4, large, ovate, yellow, tipped with purple, forming an involucre; *fruit*, a red berry.—Alpine moors in Scotland, and the North of England; rare. The fruit is said by the Highlanders to create appetite,

CÓRNUS SANGUÍNEA (*Wild Cornel, Dog-wood*).

and hence is called *Lus-a-chraois*, plant of gluttony.—Fl. July, August. Perennial.

2. *C. sanguínea* (Wild Cornel, Dogwood).—Very different in habit from the preceding; a bushy shrub, 5—6 feet high, with opposite, ovate, acute *leaves*, and terminal, many-flowered, corymbose *cymes* of cream-white *flowers; berries* small, black-purple.—Hedges and thickets, especially on a chalk or limestone soil; common. The wood, with that of the Spindle-tree (*Euónymus europǽus*) and Guelder Rose (*Vibúrnum*), which has a similar texture, and is therefore confused under the same name Dogwood, was used formerly for skewers. The leaves assume blood-red and dark purple tints early in autumn.—Fl. June. Perennial.

SUB-CLASS II. GAMOPÉTALÆ.

Having both *calyx* and *corolla* and the petals of the latter united.

SERIES I. EPÍGYNÆ.—ORD. XXXVII.—XLIII.

Ovary inferior.

§ *Stamens* epipetalous.

ORD. XXXVII. CAPRIFOLIÁCEÆ.—THE HONEYSUCKLE FAMILY.

A small but very varied Order, comprising trees, shrubs, and herbaceous plants, principally confined to the Northern Hemisphere. The *leaves* are usually exstipulate and opposite; the *flowers* conspicuous and sometimes monosymmetric; *sepals* 3—5, superior; *petals* 3—5, united; *stamens* 4—10, usually equal in number to the petals and alternate with them; *ovary*

3—5-chambered; *fruit* in most cases a berry. Such favourite plants as the fragrant Honeysuckle, the Guelder Rose, the Elder, and the elegant little plant upon which Linnæus fixed to commemorate his name, make the Order an interesting one.

1. Adóxa.—Herbs; *leaves* ternate; *flowers* small, green, 5 in a head; *corolla* rotate; *stamens* forked; *berry* with 4 or 5 1-seeded chambers.

2. Sambúcus.—Trees or shrubby herbs; *leaves* pinnate; *flowers* small, in umbellate cymes, 5-merous; *corolla* rotate; *berry* with 3—5 1-seeded chambers.

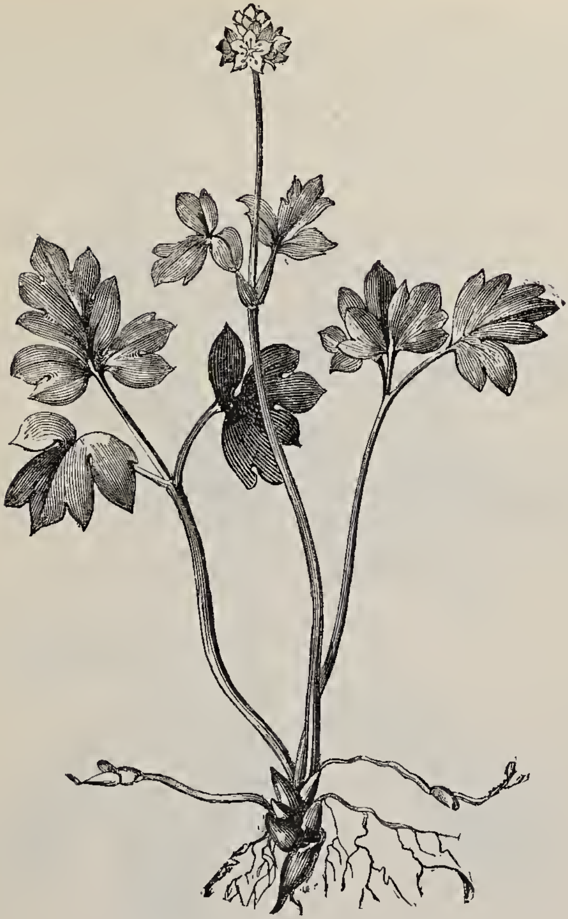
3. Vibúrnum.—Shrubs; *leaves* simple; *flowers* in cymes, 5-merous; *corolla* rotate or bell-shaped; *berry* 1-seeded.

4. Linnǽa.—Herb; *leaves* simple; *flowers* in pairs; *corolla* bell-shaped; *stamens* didynamous; *fruit* dry, 1-seeded.

5. Lonicéra.—Shrubs; *leaves* simple; *flowers* in cymose heads; *corolla* monosymmetric; *berry* of 2 or 3 several-seeded chambers.

1. Adóxa (Moschatel).—A small glabrous, succulent herb; *rhizome* creeping, scaly; *leaves* 2, radical, ternate; *flowers* in a long-stalked terminal head of 5, small, green, the 4 lateral ones 5-merous, the terminal one 4-merous; *corolla* rotate; *stamens* 4 or 5, bifurcating at the base; *anthers* dimidiate; *berry* with 1-seeded parchment-like chambers. (Name from the Greek signifying *inglorious*, from its humble growth.)

1. *A. Moschatellína* (Common or Tuberous Moschatel).—The only species, an interesting little herbaceous plant, 4—6 in. high; *stem* 4-angled; *radical leaves* long-stalked, ternate; *leaflets* triangular, lobed; *cauline leaves* or bracts 2, smaller, with sheathing petioles; *flowers* arranged as if on 5 sides of a cube.—Hedgerows; local, but widely diffused. The whole plant diffuses a musk-like scent, which,

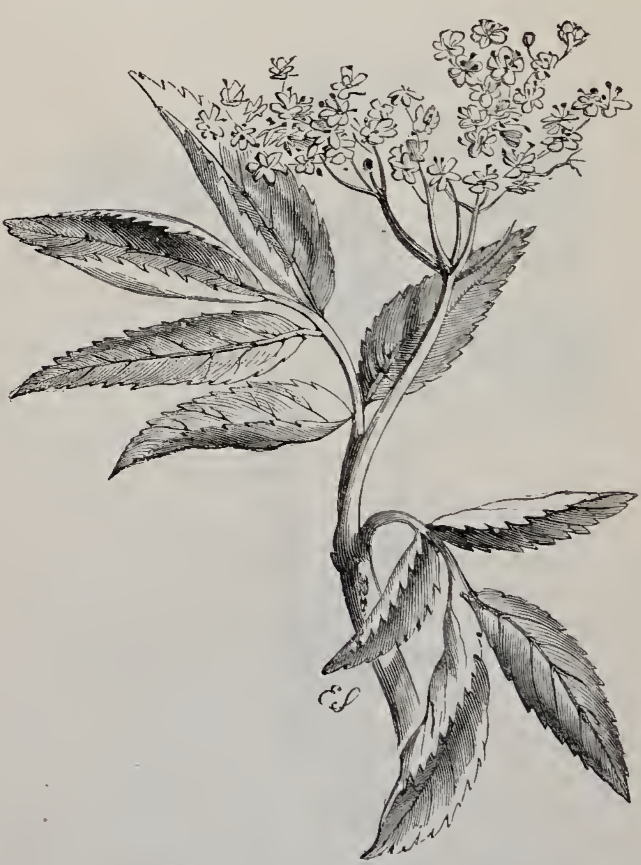


ADÓXA MOSCHATELLÍNA (*Common Moschatel*).

however, is not perceptible if the plant be bruised.—Fl. April, May. Perennial.

2. Sambúcus (Elder).—Trees, shrubs, or large herbs, remarkable for the large quantity of pith in

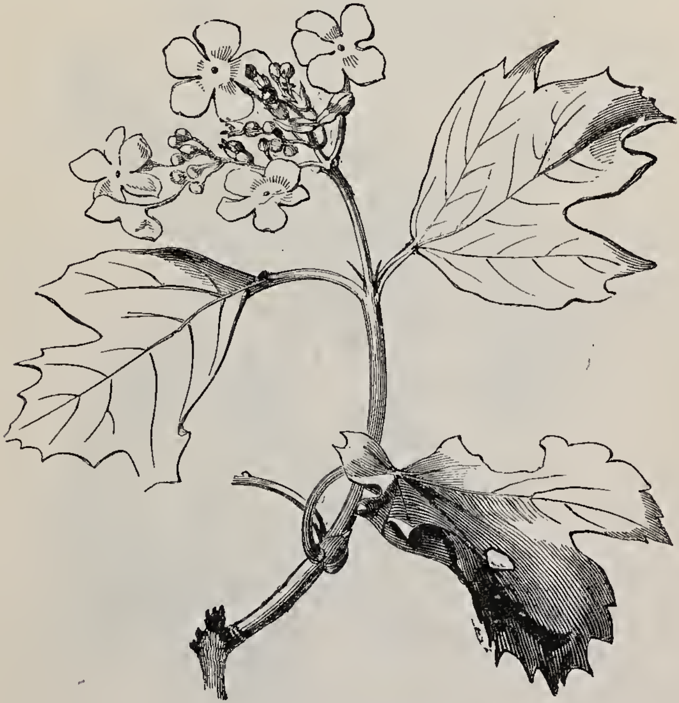
the young branches; leaves pinnate; *flowers* small, 5-merous, in umbellate cymes; *sepals* 3—5; *corolla* rotate; *stamens* 5; *ovary* 3—5-chambered; *ovules* 1 in each chamber; *fruit* a berry with 3—5 parchment-like endocarps. (Name from the Greek *sambúké*, a musical instrument, in making which elder-wood is supposed to have been employed.)



SAMBÚCUS NÍGRA (*Common Elder*).

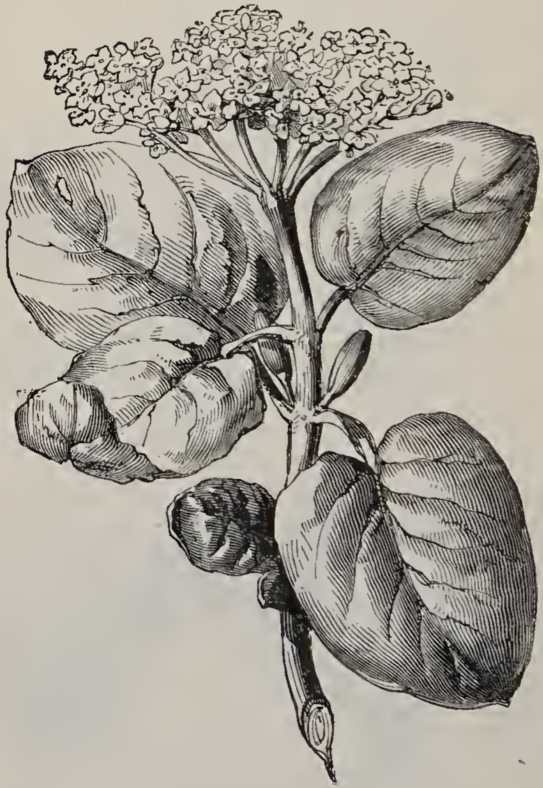
1. *S. Nígra* (Common Elder). — *Stem* woody,

forming a small tree; *bark* corky; *leaves* with a strong, unpleasant odour; *cymes* with 5 principal branches; *flowers* cream-white, of a sickly smell; *berry* small, globose, purple-black, polished, rarely green or white.—Hedges; common. The blossoms are used for making perfume; the berries for wine. Evelyn, speaking in its praise, says: "If the medicinal properties of the leaves, bark, berries, &c., were thoroughly known, I cannot tell what our countryman could ail for which he would not find a remedy, from every hedge, either for sickness or wound."—Fl. June. Perennial.



VIBÚRNUM ÓPULUS (*Guelder Rose, Water Elder*).

2. *S. Ébulus* (Dwarf Elder, Danewort).—A large herbaceous plant, 2—4 feet high, with ovate, serrate, leafy *stipules*, 3 principal branches to its *cymes*, and pink tips to its *petals*.—Bushy places; not uncommon.—Fl. July, August. Perennial.



VIBÚRNUM LANTÁNA (*Wayfaring-tree, Mealy Guelder Rose*).

3. VIBÚRNUM (Guelder Rose). — Shrubs; *leaves* simple; *flowers* 5-merous, white or pink, in cymose

clusters, small, or the outer ones male or neuter with large corollas; *corolla* rotate or bell-shaped; *stigmas* 3, sessile; *berry* 1-seeded. (Name, the Latin name for this or some similar plant.)

1. *V. Opulus* (Guelder Rose, Water Elder).—A shrub or small tree; *bark* very acrid; *leaves* smooth, 3—5-lobed, stipulate, with glands at the upper end of the stalk, assuming a rich vinous hue before falling; *flowers* in flat-topped cymes, the outer ones neuter with large snow-white corollas, rendering the bush conspicuous; *berries* slightly flattened, translucent, blood-red.—Moist woods and hedges; common.

LINNÆA BOREÁLIS (*Linnæa*).

The berries are said to be sometimes fermented and eaten, a statement scarcely credible to anyone who has chanced to smell them. In the garden variety, known as the Snowball-tree, all the flowers are neuter and the cyme has become globular.—Fl. June, July. Perennial.

2. *V. Lantána* (Mealy Guelder Rose, Wayfaring-tree).—A shrub, pubescent with stellate hairs; *leaves* elliptical, cordate, serrate, very downy beneath, exstipulate; *cymes* terminal; *flowers* small, white, all perfect; *berries* much flattened, scarlet, turning black when fully ripe.—Dry hedgerows, chiefly on calcareous soil; not general.—Fl. May, June. Perennial.

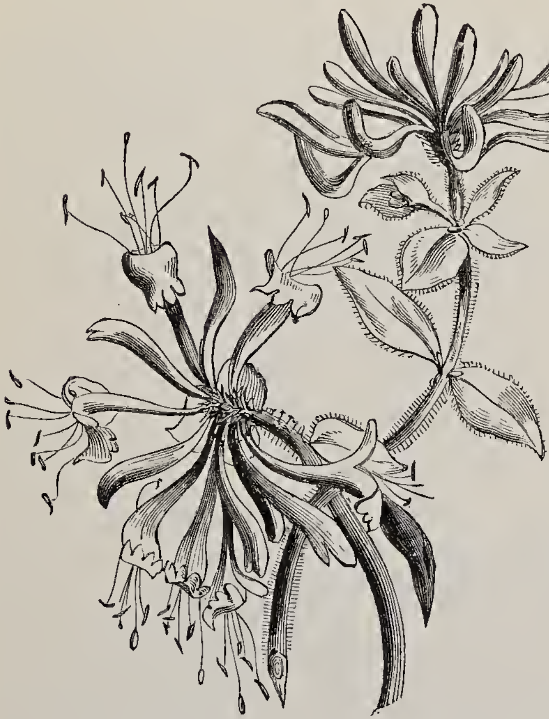
4. LINNÆA.—A very slender creeping plant; *leaves* evergreen, exstipulate; *flowers* in pairs on ascending, 2-bracteate peduncles, with drooping 2-bracteolate pedicels; *corolla* bell-shaped; *petals* 5, slightly unequal; *stamens* 4, 2 longer than the others; *fruit* seldom formed in Britain. (Name in honour of Carl von Linné, the great Swedish botanist.)

1. *L. boreális.*—The only species, almost glabrous; *leaves* ovate, obtuse, thick; *flowers* fragrant and of a delicate pink colour, crimson within.—Fir-woods in Scotland and at Hartburn, Northumberland. Deservedly regarded with peculiar interest as being the "little northern plant, long overlooked, depressed, abject, flowering early," which Linnæus himself selected as therefore most appropriate to transmit his name to posterity.—Fl. July. Perennial.

5. LONICÉRA (Honeysuckle).—Erect, prostrate or twining shrubs; *leaves* exstipulate, entire, sometimes connate; *flowers* generally in cymose heads, sometimes united by their ovaries; *sepals* 5; *petals* 5, united in a tubular or funnel-shaped corolla with a bilabiate

limb; *stamens* 5; *berry* of 2 or 3 several-seeded chambers. (Named in honour of Adam Lonicer, a German botanist.)

1. *L. Periclýmenum* (Honeysuckle, Woodbine).—*Stem* twining; *leaves* ovate or oblong, glabrous or



LONICÉRA PERICLÝMENUM (*Honeysuckle, Woodbine*).

slightly pubescent, glaucous below, not united at the base, sometimes lobed; *flowers* in stalked terminal heads, gaping, red outside, yellow within, very fragrant; *berry* globose, translucent, crimson.—A common and favourite twining shrub, the first to expand its leaves in spring, or rather in winter, and almost the last to blossom in autumn. Though highly ornamental to our woods, it is decidedly injurious to young trees, clasping them so tightly as to distort their growth. Handsome twisted walking-sticks (generally Hazel) are thus formed, but the growth of the tree is greatly checked.—Fl. July, and again in October. Perennial.

* Two other species of Honeysuckle are occasionally found in copses, but are not natives of Britain: *L. Caprifólium* (Pale Perfoliate Honeysuckle), distinguished by having the upper *leaves* connate, or united by their bases, and the *flower-heads* sessile; and *L. Xylósteum* (Upright Fly Honeysuckle), an erect shrub, with downy, stalked *leaves*, and pale yellow, scentless *flowers*, which grow in pairs in the axils.

ORD. XXXVIII. RUBIÁCEÆ.—THE BEDSTRAW FAMILY.

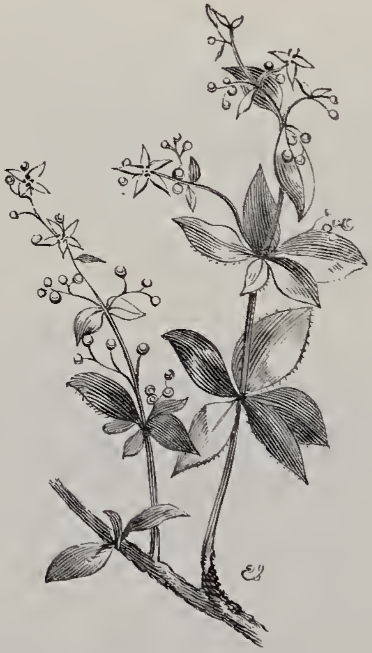
Taken in its widest extension, this is a very large Order, containing more than 2,800 species, characterised by having opposite *leaves*, interpetiolar *stipules*, gamopetalous *corollas*, epipetalous *stamens* alternate with the petals, and an inferior *ovary* of 2 carpels. The majority, forming the tribe *Cinchóneæ*, are tropical trees and shrubs with small stipules, and comprise not a few species noted for the fragrance and beauty of their flowers, and some of the highest utility to man, as food or medicine. Among the food-plants, the Coffee (*Cóffea arábica* and *C. libérica*) holds the first place, the seeds filled with horny albumen being the coffee-beans of commerce. Several species of *Cinchóna*, a genus native to the Andes, furnish Peruvian or Jesuits' Bark, from which Quinine is prepared; and Ipecacuanha is the root of *Cephäélis Ipecacuánha*, a small shrub growing in the damp forests of Brazil. The British species, however, all belong to a very distinct type. They are herbaceous plants, with slender angular *stems*, and *leaves* with such large stipules between them as to form a star-like whorl, whence they have been separated as the tribe *Stellâtœ.* Their *flowers* are small, polysymmetric and 4—6-merous; the *sepals* sometimes indistinguishable; *corolla* rotate or tubular; *ovary* 2-chambered; *ovules* 1 in each chamber; *fruit* dry, consisting of 2 indehiscent cocci. They belong to temperate and cold latitudes and possess no remarkable properties, except that of containing a red colouring matter in their roots, which is used as a dye. The most important is *Rúbia tinctória*, the Madder, the roots of which, besides yielding the valuable dye, possess the singular property of imparting a red colour to the bones of animals that feed on them. *Rúbia cordifólia* is the Manjít, another valuable red dye, a native of India. None of the British species are of any great value, though the fragrance of the leaves of the Woodruff, when dried, is well-known, the flowers of the Lady's Bedstraw (*Gálium vérum*) were used as rennet to curdle milk, and the seeds of the genus *Gálium* are said to be, when roasted, a good substitute for coffee.

1. Rúbia.—No distinct *sepals;* *corolla* wheel-shaped, or bell-shaped, 5-lobed; *fruit* fleshy.
2. Gálium.—No distinct *sepals;* *corolla* wheel-shaped, 4-lobed; *fruit* dry.
3. Aspérula.—No distinct *sepals;* *corolla* bell-shaped, 4-lobed; *fruit* dry.
4. Sherárdia.—*Sepals* 4—6; *corolla* funnel-shaped, 4-lobed; *fruit* dry.

1. Rúbia (Madder).—Herbs with axillary and terminal *cymes* of small *flowers;* *calyx-limb* ring-shaped or absent; *corolla* rotate or campanulate, 5-lobed; *stamens* 4; *styles* 2, short; *fruit* a 2-lobed

berry. (Name from the Latin *ruber*, red, from the dye obtained from some species).

1. *R. peregrína* (Wild Madder).—The only British species, a long straggling plant, many feet in length; *stems* 4-angled, with recurved bristles on the angles; *leaves* 4—6 in a whorl, ovate, glossy above, with recurved bristles on midrib and margin, nearly evergreen; *flowers* yellowish, in panicled cymes; *corolla* 5-cleft; *berries* black, about as large as currants, remaining attached till late in winter.—Rocky places in the south and west; uncommon.—Fl. June—August. Perennial.



RÚBIA PEREGRÍNA (*Wild Madder*).

2. GÁLIUM (Bedstraw).—Herbs differing chiefly from *Rúbia* in having a rotate, 4-lobed, rarely 5-lobed *corolla* and a dry *fruit* of 2 1-seeded carpels. (Name from the Greek *gala*, milk, some species being used to curdle it.)

* *Leaves* 3-*veined.*

1. *G. boreálé* (Cross-leaved Bedstraw).—*Stem* erect, 1—2 feet high; *leaves* 4 in a whorl, smooth, lanceolate; *flowers* many, white; *fruit* rough, with hooked prickles.—Damp rocky places in the north.—Fl. July, August. Perennial.

2. *G. Cruciáta* (Crosswort).—Prostrate, about a foot long, hairy; *leaves* 4 in a whorl, elliptic, soft and downy; *flowers* yellow, in 6—8-flowered axillary cymes, very fragrant, *upper* ones having pistils only, *lower*, stamens only; *fruit* smooth.—Dry banks; common.—Fl. May, June. Perennial.

** *Leaves* 1-*veined ; flowers in axillary and terminal panicles ; fruit smooth ; perennial.*

3. *G. vérum* (Lady's Bedstraw).—*Leaves* about 8 in a whorl, very narrow (almost thread-like), revolute, downy beneath; *flowers* golden-yellow, rarely pale or green, in dense axillary and terminal panicles.—Dry banks; abundant. The Highlanders use the roots, in conjunction with alum, to dye red, and the flowers to curdle milk.—Fl. June—September. Perennial.

4. *G. eréctum* (Upright Bedstraw).—Sub-erect; *leaves* 6—8 in a whorl, lanceolate, with bristly margins; *cyme* with ascending branches; *flowers* white.—Banks and pastures; not common.—Fl. June and September. Perennial.

5. *G. Mollúgo* (Hedge Bedstraw).—*Stem* ascending, square, thickened at the nodes, smooth or hairy; *leaves* 6—8 in a whorl, oblong, with a bristly point

and weak bristles on the margins; *cyme* with the lower branches horizontal or reflexed; *flowers* white.—Common everywhere in England, but rare in Scotland and Ireland.—Fl. July, August. Perennial.

6. *G. saxátilé* (Heath Bedstraw).—A small prostrate, much-branched species; *stem* smooth; *leaves* about 6 in a whorl, obovate, mucronate, fringed with a few prickles, which point forwards; *cymes* numerous, small, compact; *flowers* white.—Heaths; abundant.—Fl. June—August. Perennial.

7. *G. sylvéstré* (Mountain Bedstraw).—A similar but more erect and stiff species; *leaves* 6—8 in a whorl, linear, awned, with prominent midrib and marginal hairs, not bristles.—Limestone hills; rare. —Fl. June—August. Perennial.

8. *G. palústré* (Water Bedstraw).—*Stems* 1—3 feet high, weak, straggling, branched, smooth or rough with recurved prickles; *leaves* 4—6 in a whorl, blunt, linear, or on dry ground, oblong, frequently unequal, shining, with or without rough edges; *flowers* in loose, spreading panicles, white.—Watery places; common.—Fl. June—August. Perennial.

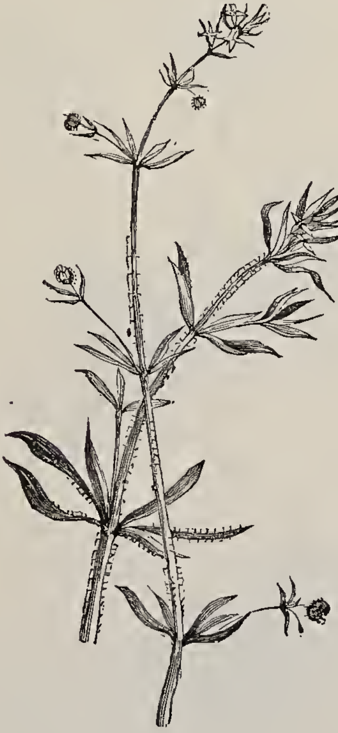
9. *G. uliginósum* (Rough Marsh Bedstraw).—A smaller species; *stems* slender, brittle, about a foot high, with recurved prickles on the angles; *leaves* 6—8 in a whorl, narrow, bristle-pointed, with recurved prickles on the margins; *cymes* few-flowered. —Watery places; common.—Fl. July, August. Perennial.

*** *Leaves 1-veined; cymes mostly axillary: flowers white; fruit hispid or tubercled; annual.*

10. *G. ánglicum* (Wall Bedstraw).—A small spreading, slender, brittle species; *leaves* about 6 in a whorl, narrow, mucronate, with forward-pointing bristles on the margins and recurved ones on the

stems ; cymes small, bifurcating, few-flowered ; *flowers* greenish ; *fruit* minute, tubercled.—Old walls and dry places in the south-east ; rare.—Fl. June, July. Annual.

11. *G. Aparíné* (Goose-grass, Cleavers).—Light green, straggling, 3—4 feet long ; *stem* and *leaves* very rough with recurved prickles ; *leaves* 6—8 in a whorl ; *flowers* 2—3 together, white, axillary ; *fruit* covered with short hooked prickles.—Hedges ; very common. The stems, leaves, and bur-like fruits cling to the coat of any animal that touches them ; whence



GÁLIUM APARINÉ (*Goose-grass*).

is derived the popular name of Cleavers or Clivers. The plant is greedily devoured by geese.—Fl. June—August. Annual.

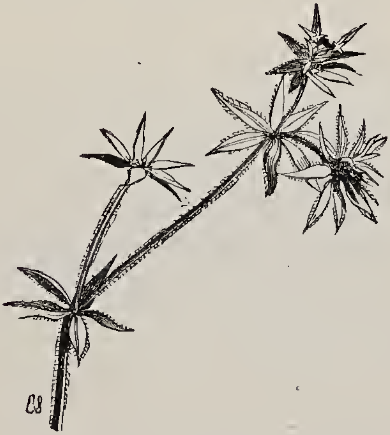
12. *G. Vaillántii*, differing chiefly in having its flowers very minute, greenish and 3—9 together, occurs only in fields near Saffron Walden, Essex.—Fl. July. Annual.

ASPÉRULA ODORÁTA (*Sweet Woodruff*).

13. *G. tricórné* (Rough-fruited Corn Bedstraw).—Resembling *G. Apariné*, but smaller and chiefly dis-

tinguished by its large *fruit*, which has a granulated, not bristly, surface, and is borne on a recurved *pedicel.*—Dry chalky fields; not uncommon. — Fl. June—October. Annual.

3. Aspérula (Woodruff).—Herbs differing from *Gálium* mainly in the longer tube which makes the small, *corolla* bell-shaped or funnel-shaped. It may be white, pink, or blue. (Name, a dimintuive from the Latin *asper*, rough, from the roughness of the leaves of some species.)


SHERÁRDIA ARVÉNSIS *(Field Madaer).*

1. *A. odoráta* (Sweet Woodruff).—Almost glabrous, about 6 in. high, erect; *leaves* 6—9 in a whorl, lanceolate, with forward-pointing prickles on their margins; *flowers* white, in stalked, terminal panieles; *fruit* rough with hooked hairs.—Woods; common. A deservedly favourite plant for its agreeable scent, when dried, of new-mown hay.—Fl. May, June. Perennial.

2. *A. cynánchica* (Quinsy-wort).—Smooth, prostrate; *leaves* 4 in a whorl, linear, unequal; *flowers* in loose clusters, white or pink.—Dry banks and pastures, especially on a chalky or limestone soil; local. It derives its name from having been formerly used as a remedy for quinsy or squinancy.—Fl. June, July. Perennial.

* Two other species, *A. taurína*, with 4 elliptic 3-veined *leaves* in a whorl, and *A. arvénsis*, with 6—10 narrow *leaves* in a whorl and blue *flowers*, occur occasionally, but are not native.

4. SHERÁRDIA (Field Madder).—A prostrate herb with whorled *leaves*, terminal sessile *umbels* of lilac *flowers*, 4—6 *sepals*, 4-lobed *corolla*, and dry *fruit*. (Named in honour of William Sherard, founder of the chair of Botany at Oxford.)

1. *S. arvénsis* (Field Madder).—A small, branched, spreading plant; *leaves* narrow, pointed, 4—6 in a whorl; and *flowers* minute, lilac, resembling *Aspérula arvénsis*, but differing in its pointed leaves and distinct sepals.—Cultivated land; abundant.—Fl. April, October. Annual.

ORD. XXXIX. VALERIÁNEÆ.—THE VALERIAN FAMILY.

A small Order of plants which are mostly herbaceous, with opposite, exstipulate *leaves*, and small, usually asymmetric *flowers* in dichasial, often crowded *cymes*. The *calyx* is superior, becoming finally a border, or pappus, to the fruit; the *corolla*, of 3—6 united petals, is tubular and sometimes pouched or spurred at the base; *stamens* 1 or 3, rarely 5, epipetalous; *ovary* with 1—3 chambers, forming a dry indehiscent *fruit*, which is 1-seeded, two of the chambers being empty. The Order chiefly inhabits temperate countries, and the plants forming it are often strong-scented or aromatic. Many of them possess properties worthy of notice, but by far the most remarkable is *Nardostáchys Jatamánsi*, the Spikenard of Scripture, and the *Nardus* of the ancient Classical authors. It grows in Bhotan, in India, where it is called *Jatamansi*. Even when green the young shoots are pleasantly fragrant; but its odorous quality is much strengthened by drying the plant. The radical leaves surrounding one of the young tufted shoots are torn up, along with a part of the very fragrant root, and having been dried in the sun, or by artificial heat, are sold as a drug. In ancient times this drug was conveyed by way of Arabia to Western Asia, and thus reached the Hebrews. Judas valued the box of ointment with which Mary anointed our Blessed Lord's feet at two hundred denarii (£6 9*s*. 2*d*.). By the Romans it was considered so precious that the poet Horace promises Virgil a *cadus*, or about three dozen modern bottles, of wine for a small onyx-box full of spikenard. It was a Roman custom in festive banquets, not only to crown the guests with flowers, but also to anoint them with spikenard. Other members of the Order still valued for a similar use are *Valeriána céltica* and *V. saliúnca*, which are believed to be the *Saliúnca* of Virgil and other ancient writers. They are natives of the mountains of Styria and Carinthia, where their roots are grubbed up with danger and difficulty by the peasants from rocks on the borders of eternal snow. They are then tied in bundles, and sold at a very low price to merchants, who send them by way of Trieste to Turkey and Egypt, where they are retailed at a great profit, or passed on to India and the interior of Africa. They are used to scent baths. The roots of our common Valerian (*Valeriána officinális*) are used in medicine, being a powerful stimulant to the nervous system in cases of hysteria or epilepsy. They have a very remarkable effect on cats, producing a kind of intoxication. The seeds of the Red Spur-Valerian (*Centránthus rúber*) were used in former times in the process of embalming the dead; and some thus employed in the twelfth century, on being removed from the cere-cloth in the present century, and planted, are said to have germinated. The young leaves of Lamb's Lettuce (*Valerianélla*) are eaten as salad, as also in Sicily are those of *Centránthus.*

1. VALERIÁNA.—*Corolla* 5-lobed, pouched at the base; *stamens* 3; *fruit* 1-chambered, crowned with a feathery pappus.

2*. CENTRÁNTHUS.—*Corolla* 5-lobed, spurred at the base; *stamen* 1; *fruit* 1-chambered, crowned with a feathery pappus.

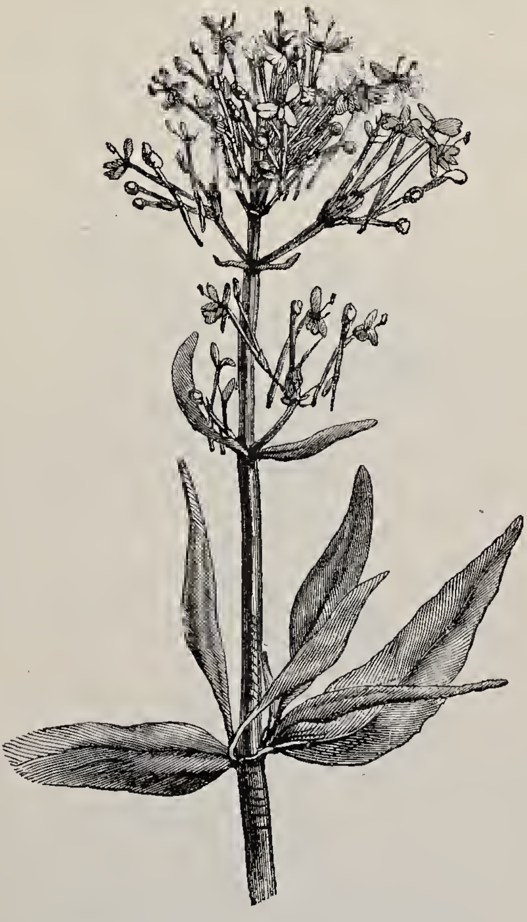
3. VALERIANÉLLA.—*Corolla* 5-lobed, obconic; *stamens* 3; *fruit* 3-chambered, crowned with 3—5 small sepals.

1. VALERIÁNA (Valerian).—*Flowers* in corymbose, capitate, or panicled cymes, with *bracteoles*, sometimes sub-diœcious; *pappus* deciduous; *corolla* generally monosymmetric with an obconic tube, pouched at its base. (Name said to be from the Latin *váleo*, I am well, from its medicinal virtue.)

1. *V. dióica* (Small Marsh Valerian).—Erect, unbranched, about a foot high with runners; *radical leaves* stalked, ovate; *cauline leaves* pinnatifid, with a large terminal lobe; *flowers* pinkish, in a terminal corymbose cyme; *stamens* and *ovaries* on different plants, the latter in smaller, more crowded, deeper coloured flowers.—Marshy ground; frequent.—Fl. May, June. Perennial.

2. *V. Mikánii* (Great Wild Valerian).—Much taller and stouter than the last, but resembling it in

habit and in the colour and smell of the flowers; with suckers; *leaves* all pinnate, of 13—21 leaflets, which are lanceolate, dentate.—Damp places; not common. This is the species used in medicine, and



CENTRÁNTHUS RÚBER (*Red Spur-Valerian*).

the roots of which are so attractive to cats, and, it is said, also to rats.—Fl. June, July. Perennial.

3. *V. sambucifólia* (Elder-leaved Valerian).—Differs mainly in having runners and fewer (9—13), broader leaflets.

4.* *V. pyrenáica* (Heart-leaved Valerian).—A large coarse plant, with very large, stalked, cordate, serrate *leaves*, sometimes occurring naturalised in plantations.—Fl. June, July. Perennial.

*2. CENTRÁNTHUS (Spur-Valerian). — Glabrous, leafy plants; *flowers* in terminal, panicled cymes, bracteolate; *pappus* deciduous; *corolla* with 5 unequal lobes, a long compressed tube, and a spur. (Name from the Greek *kentron* a spur, *anthos* a flower.)

1.* *C. rúber* (Red Spur-Valerian). — Glaucous, 1—2 feet high; *leaves* entire, ovate, acute; *flowers* crimson, deep rose-red, or white.—Chalk-pits, railway-banks, limestone-quarries, and old garden-walls; common, but not indigenous. A very handsome garden plant. Fl. June—September. Perennial.

2.* *C. Calcítrapa*, differing chiefly in having pinnatifid *cauline leaves*, occurs as a garden escape at Eltham, Kent.

3. VALERIANÉLLA (Corn-salad). — Small plants, repeatedly forked; *leaves* simple; *flowers* minute, solitary or in crowded bracteate cymes in the forks of the branches; *calyx* generally distinguishable as teeth on the fruit; *corolla* 5-lobed, obconic, polysymmetric; *fruit* generally of 2 empty barren and 1 fertile (1-seeded) chambers. (Name, a diminutive of *Valeriána*.)

1. *V. olitória* (Common Corn-salad, Lamb's Lettuce). — Smooth, flaccid, brittle, 4—12 in.

high; *leaves* long and narrow, a little toothed near the base, the upper ones clasping the stem; *flowers* very minute, pale lilac, in dense terminal leafy heads; the fertile chamber of the *ovary* thick and corky at the back, crowned by the 3 calyx-teeth.—Cornfields; common. It is sometimes cultivated as a salad.—Fl. May, June. Annual.

VALERIANÉLLA OLITÓRIA (*Common Corn-salad, Lamb's Lettuce*).

2.* *V. eriocárpa* (Woolly-fruited Corn-salad), differing in having a hairy *fruit*, crowned by a large nearly regular, campanulate *calyx*, and with its fertile chamber not corky, occurs occasionally, but is not native.—Fl. June. Annual.

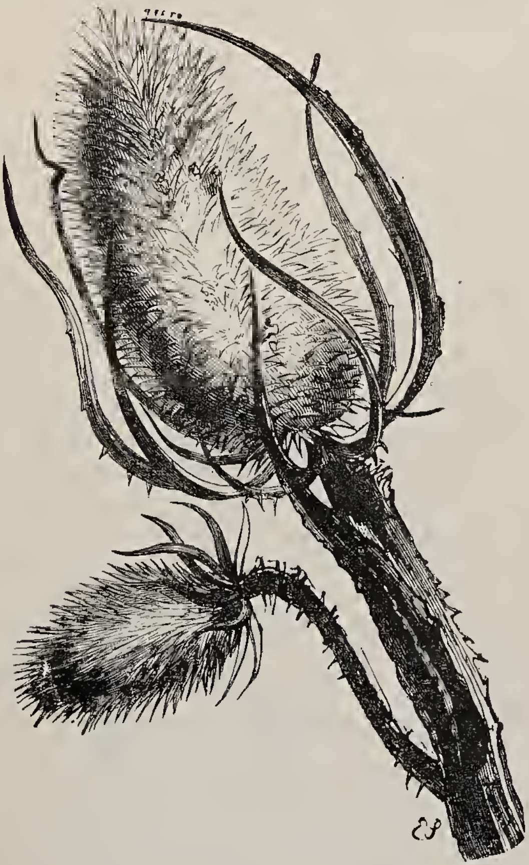
3.* *V. carináta* (Keeled-fruited Corn-salad), differing in its blue *flowers* and oblong, boat-shaped *fruit*, crowned by 1 sepal, with its fertile chamber not corky and the two barren ones inflated, occurs rarely on banks, but is not native.—Fl. April—June. Annual.

4. *V. rimósa* (Sharp-fruited Corn-salad).—About a foot high, more slender than *V. olitória*; *flowers* solitary in the forks of a loose cyme, pale blue; *fruit* sub-globose, crowned by 1 erect tooth, with its barren chambers inflated and larger than the fertile one, which is not corky.—Cornfields; rare.—Fl. June—August. Annual.

5. *V. dentáta* (Toothed Corn-salad).—Similar to the last; *leaves* much toothed towards the base; *flowers* flesh-coloured; *fruit* not inflated, crowned with the same unequally 4-toothed calyx.—Cornfields and banks; common.—Fl. June—August. Annual.

ORD. XL. DIPSÁCEÆ.—THE TEAZLE FAMILY.

A small Order of herbaceous plants inhabiting temperate regions, and possessing no remarkable properties. The *leaves* are generally opposite and exstipulate, and the *flowers*, like those of the *Compósitæ*, are crowded together in heads with an *involucre* of bracts; but each flower is also surrounded by a calyx-like *involucel* of several more or less rigid bracteoles. The *calyx* is superior, expanding into a cup-shaped tube generally with a pappus; *corolla* tubular, with 4—5 unequal lobes; *stamens* 4, epipetalous, not united; *fruit* dry, indehiscent, 1-seeded. The most striking distinction between the members of this and those of the following Order is the 4 free stamens in each flower, or floret, as it is often called. *Dípsacus Fullónum* is the Fuller's Teazle, a plant with large cylindric heads of flowers, which are embedded in stiff, hooked bracts. These heads are set in frames and used in dressing broad-cloth, the hooks catching up and removing all loose particles of wool, but giving way when held fast by the substance of the cloth.



DÍPSACUS SYLVÉSTRIS (*Wild Teazle*).

This is almost the only process in the manufacture of cloth which it has been found impossible to execute by machinery; for although various substitutes have been proposed, none has proved on trial exactly to answer the purpose.

1 Dípsacus.—*Inner bracts* spinous and prominent, forming rigid awns all over the head.

2. Scabiósa.—*Inner bracts* inconspicuous scales or hairs.

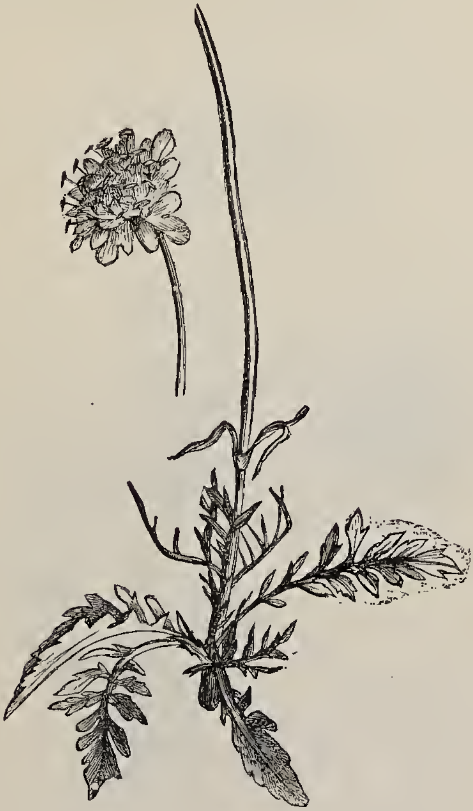
1. Dípsacus (Teazle). — Erect prickly plants; *stems* angular; *leaves* usually connate at the base; *heads* usually elongated; with a columnar *common receptacle;* stiff spreading *involucral bracts;* prominent, spinous *inner bracts; involucel* 4-angled; *calyx-tube* cup-shaped; *petals* 4, unequal. (Name from the Greek *dipsaō*, I thirst, in allusion to the water which usually collects in the hollows formed by the pairs of united leaves. This serves as a moat to prevent insects crawling up the stem to steal the honey in the flowers, which is destined for flying insect visitors who will carry pollen from flower to flower.)

1. *D. sylvéstris* (Wild Teazle).—A stout plant, 3—6 feet high, with an erect prickly *stem;* large, bright green *leaves*, which are prickly underneath and united at the base; *heads* large, conical, covered with straight bristles; *involucre* curved upwards; *flowers* lilac, expanding in one or two bands half-way up the head and then both downwards and upwards. —Waste places; common.—Fl. July—September. Biennial.

2.* *D. Fullónum* (Fuller's Teazle) differs from *D. sylvéstris* mainly in having a more cylindrical *head*, a reflexed *involucre*, and hooked *bristles* on the receptacle. It is not known out of cultivation, except as an occasional escape, and is probably only a form of *D. sylvéstris*.

3. *D. pilósus* (Small Teazle, Shepherd's Rod).—Smaller than *D. sylvéstris* in all its parts, rough with bristles; *leaves* stalked, with a small leaflet at the

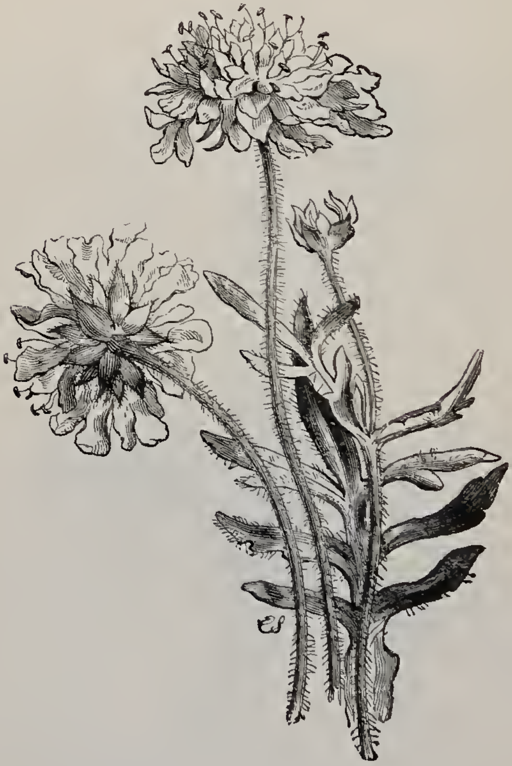
base on each side ; *heads* small, nearly globose, drooping in bud ; *involucre* reflexed ; *flowers* white.—Moist shady places ; not common.—Fl. August, September. Biennial.



SCABIÓSA COLUMBÁRIA (*Small Scabious*).

2. SCABIÓSA (Scabious).—*Leaves* entire or pinnatifid ; *heads* hemispherical or flat ; *involucre* of 1 or 2

whorls of bracts; *common receptacle* hairy or scaly; *involucel* 4—8-angled, 4—5-lobed; *outer florets* often larger and unsymmetrical; *calyx-tube* contracted at the top; *limb* cup-shaped, with 4—10 stiff bristles; *corolla* 4—5-lobed, sometimes bilabiate; *fruit* nearly cylindrical. (Name from the Latin *scabies*, the leprosy, for which disease some of the species were supposed to be a remedy.)



SCABIÓSA ARVÉNSIS (*Field Scabious*).

1. *S. Succísa* (Premorse or Devil's-bit Scabious).—

A slender, little-branched plant, with a short and abrupt *rhizome*, as if bitten off (premorse); a hairy *stem*; few, mostly entire, oblong *leaves*; nearly globose *heads* of purplish-blue or white *flowers*, with a nearly symmetric, 4-cleft *corolla*. — Heaths and pastures; abundant. John Parkinson, in his "Theatrum Botanicum" (1640), alludes to the fable "that the Devile, envying the good that this herbe might do to mankinde, bit away parte of the roote, and thereof came the name *Succisa*, Devil's-bit."—Fl. July—October. Perennial.

2. *S. Columbária* (Small Scabious).—Well distinguished from the last by its pinnatifid, lighter green *leaves*; *heads* flatter at first; and *flowers* lilac, rather than purple, with a 5-cleft *corolla*, the outer ones being larger and very unsymmetrical.—Pastures on a calcareous soil; not uncommon.—Fl. July—September. Perennial.

3. *S. arvénsis* (Field Scabious).—A tall bristly plant, 2—3 feet high, not much branched; *radical leaves* simple; *cauline* ones pinnatifid; *heads* large, convex; *flowers* handsome, lilac, with 4-lobed *corollas*, the inner ones nearly symmetrical, the outer larger and bilabiate.—Cornfields and waysides; common.—Fl. July—September. Perennial.

4. *S. marítima*, a species with all its *leaves* pinnatifid, an erect branching panicle of *heads*, and a 5-cleft *corolla*, has been found at St. Ouen's Bay, Jersey.

ORD. XLI. COMPÓSITÆ.—THE COMPOSITE FAMILY.

This is by far the largest of all the Natural Orders, containing as it does nearly 10,000 species, in 800 genera, or about one-tenth of all known Flowering Plants. These figures serve to illustrate the progress made by Botany during the last hundred years, since the total number of species known to Linnæus was only 8,500. The *Compósitæ* form a very natural Order, all agreeing in a large number of characters, especially in the capitate inflorescence, or crowding together of the florets, or little flowers, into a head, or "compound flower," as Linnæus called it, to which the Order owes its name, and in the union of the anthers referred to in the name of the co-extensive class *Syngenésia* in the Linnæan system. Though they manifest their success in the struggle for existence not only by their great number of genera and species, but also by a striking profusion of individuals, as is familiar to us all in the cases of Thistles, Daisies, Dandelions, &c., and by a world-wide geographical distribution, they seldom reach the dimensions of shrubs, few of them being even woody. They must be considered, however, as on the whole the most highly organised members of the Vegetable Kingdom. Their *leaves* are exstipulate, generally simple, and mostly scattered. The *heads* are generally many-flowered, and are surrounded by one or more whorls of scales or *bracts* forming an *involucre*, which is often *imbricated*, the scales overlapping like the tiles of a house (Latin *imbrex*, a tile). The *common receptacle*, on which the florets are situated, varies in shape, being flat, concave, or convex, and in surface, being sometimes smooth and naked, and in other cases pitted or furnished with scales or bristles, known as *pales*. The *florets*, which are true flowers, though generally small, may be all alike in form or colour or both, as in Thistles, Dandelions, Groundsel, &c., or the outer or *ray-florets* may differ from the inner or *disk-florets* in form, as in the Corn-Marigold, or in colour also, as in the Daisy. The *calyx* is superior, and there are 5 sepals, though they are seldom distinguishable, the limb, if present, being generally represented by a *pappus* of hairs, which may be sessile on the fruit, as in the Thistle, or stalked, as in the Dandelion, when the fruit is termed beaked, the hairs themselves being feathery or *plumose*, as in the former, or simple or *pilose*, as in the latter. The *corolla* consists of 5 valvate petals, either *tubular* and polysymmetric, as in all the florets of Thistles and Groundsel and the disk-florets of the Daisy, or tubular below and *ligulate* or strap-shaped above, as in all the florets of the Dandelion and the ray-florets of the Daisy. The florets may be all *perfect*, as in Thistles and Dandelions; or the ray-florets may have no stamens, as in the Daisy, or be *neuter*, having neither stamens nor ovary, as in the Cornflower; whilst the disk-florets may be perfect, as in the Daisy, or exclusively *staminate*, as in the Garden Marigold. Occasionally all the florets may be staminate or all carpellate, and then the two kinds of flowers may occur on the same plant (*monœcious*), or on different ones (*diœcious*). The 5 epipetalous *stamens* usually have their filaments free but their anthers united (*syngenesious*), and there is often a tail-like appendage at the base of each anther-chamber. There are 2 *carpels* united to form a 1-chambered, inferior *ovary*, with 1 style, generally bifurcating above, the *stigmas* lining the inner surface of the fork. The tube of syngenesious anthers in the perfect florets is generally formed before the elongation of the style, which then grows up through it, sweeping the pollen out of the anthers by means of tufts of *expelling hairs* at the summit of its two branches, which do not diverge till afterwards. The *fruit* is a *cypsele*, or dry, indehiscent, 1-chambered, 1-seeded structure, often crowned by the pappus.

For convenience of reference, the Order is divided into three Sub-orders, comprising thirteen Tribes; but one of the Sub-orders and five of the Tribes contain no British plants, or any others of great interest. The two Sub-orders represented in Britain are the *Tubuliflóræ* and the *Liguliflóræ*. In the

Tubuliflóræ the florets are either all tubular and perfect, or the disk-florets are tubular and the ray-florets ligulate, the former being generally perfect and the latter carpellate or neuter. The members of this Sub-order have a watery juice. The Sub-order *Liguliflóræ* have all their florets ligulate and perfect, and have a milky juice. They are most abundant in the temperate regions of the Northern Hemisphere; the *Tubuliflóræ* in the Tropics.

The *Tubuliflóræ* contain a variety of principles, so variously blended as to produce very diverse results. Bitterness, in a greater or less degree, is characteristic of many, and is often accompanied by the presence of resin, or volatile oil, so that the plants produce tonic, stimulant, or astringent effects. The Wormwoods (*Artemísia*), of which the Southernwood of gardens (*A. Abrótanum*), a fragrant shrub, used on the Continent in making beer, is one species, and the Tarragon (*A. Dracúnculus*), used to flavour vinegar, is another, are extremely bitter. The genera *Ánthemis* and *Matricária*, the Chamomiles and Feverfews, contain an acrid volatile oil that gives them their properties as febrifuges. The Coltsfoot (*Tussilágo*) and Elecampane (*Inula Helénium*) contain gum so united with their bitter and astringent properties as to render them valuable sedatives. The oily seeds of the Sunflower (*Heliánthus ánnuus*) are largely eaten in Russia, and the Jerusalem Artichoke, the tubers of which hold a high rank among our esculent vegetables, is another species (*H. tuberósus*) of the same genus. The latter grows freely in any soil, and produces abundance of tubers, though it rarely flowers in England. It is called an Artichoke from the similarity of flavour in its tubers to the Globe Artichoke (*Cýnara Scólymus*), a Thistle in which the bases of the involucral bracts form the edible portion. The name "Jerusalem" is said to be a corruption of the Italian *girasole*, the Sunflower, and by an amusing transition, soup made from these Artichokes is called "Palestine Soup." The flower-heads of Safflower (*Cárthamus tinctória*), which give a red colour, are the most valuable dye produced by the Order.

Among the *Liguliflóræ*, the Common Dandelion (*Taráxacum officinálé*) supplies a valuable medicinal extract; its blanched leaves are a wholesome salad; and its roots are used to adulterate coffee. The Lettuce (*Lactúca satíva*), besides its extensive use as salad, yields from the milky juice of its root an extract with narcotic properties resembling those of opium. The blanched leaves of Endive (*Cichórium Endívia*) afford a winter salad, and the allied Chicory or Succory (*C. Íntybus*) is also so used, though it is more cultivated for the sake of its roots, which are roasted and mixed with coffee. Salsafy (*Tragópogon porrifólius*) and Scorzonera (*Scorzonéra hispánica*) are also cultivated for the sake of their edible roots.

Sub-Order 1. *Tubuliflóræ.—Florets all tubular, or only the ray-florets ligulate; juice watery.*

Tribe 1. *Eupatórieæ.—Leaves mostly opposite; florets all tubular and perfect; anthers not tailed.*

1. Eupatórium.—*Heads* few-flowered; *bracts* imbricate, oblong; *receptacle* naked; *styles* much longer than the florets.

Tribe 2. *Asteroídeæ.—Leaves scattered; ray-florets ligulate, carpellate or neuter, or absent; disk-floret tubular, perfect.*

2. Solidágo.—*Florets* all yellow; *receptacle* naked, pitted; *pappus* of one row of stiff hairs.

3. Béllis.—*Ray-florets* white or pink; *receptacle* naked, conical; no *pappus*.

4. Áster.—*Ray-florets* in one row, purple, or absent; *receptacle* naked, pitted; *pappus* of many rows of stiff hairs.

5. Erígeron.—*Ray-florets* in two or more rows; *receptacle* naked; *pappus* of many rows of stiff hairs.

Tribe 3. *Inuloídeæ.—Leaves scattered; ray-florets ligulate, yellow, or absent; disk-florets tubular, perfect, usually yellow; anthers with* 2 *bristles at their base; pappus-hairs generally slender, silky.*

6. Filágo.—*Florets* all tubular, the outer carpellate, the inner perfect; *receptacle* conical, with few scales at the margin; *pappus* of slender silky hairs.

7. Antennária.—*Heads* sub-diœcious; *florets* all tubular; *pappus* hairy, that of the staminate florets with club-shaped hairs.

*8. Anáphalis.—*Heads* sub-diœcious; *florets* all tubular; *pappus* of one row of free, slender, slightly barbed bristles.

9. Gnaphálium.—*Florets* as in *Filago*; *receptacle* flat, naked; *pappus* of slender silky hairs.

10. Ínula.—*Ray-florets* ligulate, yellow, carpellate; *disk-florets* tubular, perfect; *receptacle* naked; *pappus* of one row of hairs.

11. Pulicária.—Differing from *Inúla* chiefly in having an outer row of short scales to the *pappus*.

Tribe 4. *Helianthoídeæ.—Leaves opposite; ray-florets ligulate, yellow, carpellate or neuter, or absent; disk-florets tubular, perfect, generally yellow; receptacle scaly; anthers not tailed; pappus of a few stiff scales or bristles.*

*12. Xánthium.—*Heads* monœcious; *staminate florets* many; *anthers* free; *carpellate florets* 2, enclosed by the spinous *involucre*.

13. Bídens.—*Ray-florets* generally absent; if present, neuter; *pappus* of 2—5 barbed bristles.

*14. Galinsóga.—*Ray-florets* few, in one row; *receptacle* conical; *pappus* of 1 row of broad ciliate scales.

Tribe 5. *Anthemídeæ.—Leaves scattered; ray-florets ligulate or tubular; anthers not tailed; pappus absent or minute.*

15. Achilléa.—*Ray-florets* few, ligulate, white, broad; *receptacle* scaly; *fruit* compressed; no *pappus*.

16.—Diótis.—*Florets* all tubular, perfect, with 2 persistent spurs at the base of the corolla; *receptacle* scaly; *fruit* compressed; no *pappus*.

17. Ánthemis.—*Ray-florets* in 1 row, ligulate, white, oblong, carpellate or neuter, or absent; *receptacle* convex, scaly; *fruit* not compressed; no *pappus*.

18. Chrysánthemum.—*Ray-florets* in 1 row, ligulate, white or yellow; *receptacle* flat or nearly so, naked; no *pappus*.

19. Matricária.—*Ray-florets* in 1 row, ligulate, white; *receptacle* conical, naked; no *pappus*.

*20. Cótula.—*Florets* all tubular, the outer row carpellate; *corolla* 4-lobed, with 2 spurs at the base; *receptacle* flat, naked; no *pappus*.

21. Tanacétum.—*Florets* all tubular; *receptacle* naked, broad; *fruit* with a broad epigynous disk; no *pappus*.

22. Artemísia.—*Florets* few, all tubular; *receptacle* naked, narrow; *fruit* with a small epigynous disk; no *pappus*.

Tribe 6. *Senecionídeæ.—Leaves scattered; ray-florets ligulate, or absent; receptacle naked; anthers not tailed; pappus usually of very soft hairs.*

23. Tussilágo.—*Leaves* all radical; *heads* solitary, many-flowered; *outer florets* ligulate.

24. Petasítes.—*Leaves* all radical; *heads* numerous, in a raceme, many-flowered; *outer florets* tubular.

*25. Doronícum.—*Involucral bracts* in 2 or 3 rows, equal; *ray-florets* in 1 row, ligulate, without pappus; *florets* all yellow; *pappus* of the disk-florets of several rows of stiff hairs.

26. Senécio.—*Involucral bracts* in 1 row, equal; *florets* all yellow; *ray* sometimes absent; *pappus* of several rows of soft, slender hairs.

Tribe 7. Cynaroídeæ.—Leaves scattered, usually spinous; bracts imbricate, spinous; florets all tubular and usually perfect; receptacle scaly; pappus generally present.

27. Carlína.—*Outer bracts* spinous; *inner* chaffy and spreading; *anthers* tailed; *pappus* in 1 row, branched and feathery.

28. Árctium.—*Involucre* globose; *outer bracts* hooked; *anthers* tailed; *pappus* in several rows of short simple hairs.

29. Cárduus.—*Leaves* decurrent; *bracts* spinous; *anthers* scarcely tailed; *fruit* compressed; *pappus* in many rows of long, equal, rough hairs.

30. Cnícus.—Differing from *Cárduus* mainly in its feathery *pappus*.

31. Onopórdon.—Differing from *Cárduus* mainly in its honeycombed *receptacle* and 4-angled *fruit*.

*32. Mariána.—Resembling *Cárduus*, but with united *filaments* and silky *pappus*.

33. Saussúrea.—*Bracts* not spinous; *anthers* tailed; *pappus* in 2 rows, outer bristly, inner longer, feathery.

34. Serrátula.—Bracts not spinous; *anthers* not tailed; *pappus* in several rows of long unequal hairs, the inner longest.

35. Centaúrea.—*Outer florets* usually large, unsymmetrical and neuter; *pappus* in several rows of short unequal hairs, the second row longest, or rarely absent.

Sub-Order 2. Liguliflóræ.—Florets all ligulate; juice milky.

Tribe 8. Cichoráceæ.—Leaves scattered; florets ligulate, 5-toothed.

36. Cichórium.—*Involucre* of 2 rows, inner of 8 scales, reflexed after flowering; outer of 5 smaller loose scales; *pappus* a double row of small chaffy scales.

37. Arnosēris.—*Bracts* about 12 in 1 row, converging after flowering; *receptacle* flat, naked, pitted; *pappus* reduced to a ring.

38. Lapsána.—*Heads* 8—12-flowered; *bracts* in 1 row, erect; *receptacle* flat, naked; *pappus* absent.

39. Pícris.—*Bracts* in 2 rows, the outer smaller and narrow, the inner equal; *receptacle* flat, naked; *fruit* beaked; *pappus* in 2 or more rows of feathery hairs.

40. Crépis.—*Bracts* in 2 rows, outer shorter; *receptacle* flat, pitted; *fruit* tapering or beaked; *pappus* of many rows of simple hairs.

41. Hierácium.—*Bracts* many, imbricate, oblong; *receptacle* nearly flat, pitted; *fruit* not beaked; *pappus* of one row of stiff, brittle, unequal, brownish hairs.

42. Hypochǽris.—*Bracts* many, imbricate, oblong; *receptacle* flat, scaly; *fruit* rough, often beaked; *pappus* feathery, often with an outer row of short bristles.

43. Leóntodon.—*Bracts* in 2—3 rows, the outer smaller; *receptacle* flat, naked; *fruit* shortly beaked; *pappus* of 1 or 2 rows of hairs, the inner feathery.

44. Taráxacum.—*Bracts* in 2 rows, inner erect,

outer often recurved; *receptacle* flat, naked, pitted; *fruit* rough, with a long slender beak; *pappus* of white, silky, simple hairs.

45. Lactúca.—*Bracts* imbricate, outer shorter; *receptacle* flat, naked; *fruit* flattened, generally with a long slender beak; *pappus* of many simple hairs.

*46 Prenánthes.—Differing from *Lactúca* mainly in having a less flattened, slightly ribbed, unbeaked *fruit*.

EUPATÓRIUM CANNABÍNUM (*Common Hemp Agrimony*).

47. Sónchus.—*Bracts* imbricate in several rows; *receptacle* flat, naked, pitted; *fruit* much flattened, not beaked; *pappus* of many rows of white, simple, silky hairs.

48. Tragopógon.—*Bracts* 8—10, long, narrow,

united below; *receptacle* naked; *fruit* with longitudinal ridges, and a long slender beak; *pappus* of many rows of feathery hairs.

1. EUPATÓRIUM (Hemp Agrimony).—Herbs or undershrubs; *leaves* opposite; *heads* in corymbose cymes, purplish, few-flowered; *involucral bracts* imbricate, oblong; *receptacle* flat, naked; *florets* all tubular and perfect; *styles* much longer than the

SOLIDÁGO VIRGAÚREA (*Golden-rod*).

florets; *pappus* hairy. (Name from *Mithridátes Eúpator*, who is said to have brought the plant into use.)

1. *E. cannabínum* (Common Hemp Agrimony).—The only British species, a tall, downy plant, 3—6 feet high, with a reddish *stem;* palmately 3—5-lobed *leaves* with lanceolate serrate *leaflets:* and terminal corymbs of small crowded *heads* of dull lilac *flowers*, remarkable for their very long, deeply cloven *styles.*—Moist places; common. Aromatic, and said to be tonic.—Fl. July—September. Perennial.

BELLIS PERÉNNIS (*Common Daisy*).

2. Solidágo (Golden-rod).—Herbs or undershrubs; *leaves* cauline, scattered, simple; *heads* in branched

cymes, yellow, with ray-florets; *bracts* many, imbricate, adpressed; *receptacle* naked; *pappus* of one row of stiff hairs. (Name from the Latin *solidare*, to unite, from its supposed value in healing wounds.)

1. *S. Virgaúrea* (Golden-rod).—The only British species, an erect, little-branched plant, 2—3 feet high, with roughish, angular *stems;* simple, lanceolate, entire or serrate *leaves;* and conspicuous long terminal crowded clusters of small yellow *heads.*—Dry woods; common. On mountainous heaths a variety (var. *cámbrica*) occurs with short *stems*, broader *leaves*, and larger *flower-heads.*—Fl. July—September. Perennial.

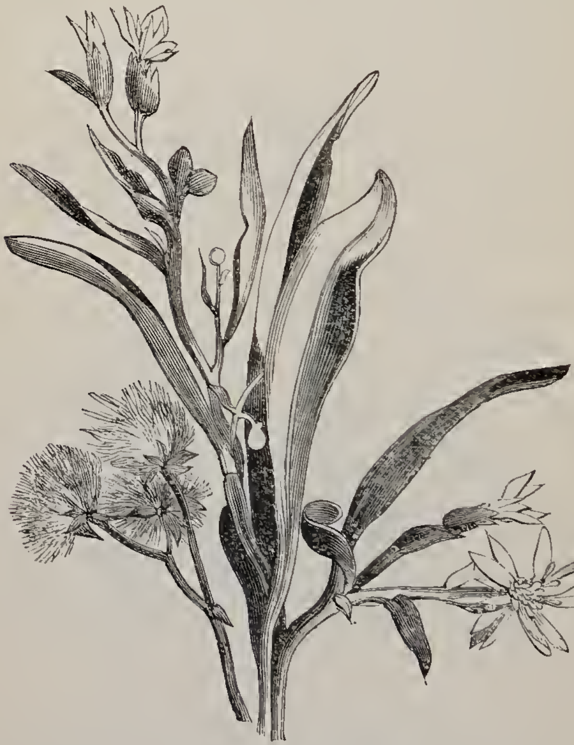
3. Béllis (Daisy).—Small plants; *leaves* usually all radical; *heads* solitary; *bracts* in 1 or 2 rows, herbaceous, equal, blunt; *receptacle* naked, conical; *ray-florets* in 1 row, ligulate, white or pink; *disk-florets* yellow; *fruit* compressed; no *pappus.* (Name from the Latin *bellus*, pretty.)

1. *B. perénnis* (Common Daisy).—The only British species; *leaves* obovate-spathulate, fleshy, in a radical rosette; *scape* 2—4 in. high; *ray-florets* generally white, tipped with crimson.—Pastures; very common. A universal favourite.—Fl. nearly all the year round. Perennial.

4. Aster (Starwort).—*Leaves* scattered, simple; *heads* generally with 1 row of purple, blue, or white *ray-florets; disk* yellow; *bracts* imbricate, herbaceous; *receptacle* naked, honeycombed; *fruit* compressed, not beaked; *pappus* of many rows of stiff hairs. (Name from the Greek *astér*, a star.)

1. *A. Tripólium* (Sea Starwort).—A stout, succulent plant, 1—3 feet high, with lanceolate, smooth, fleshy *leaves*, and corymbs of large handsome *heads* of *flowers*,

the inner *florets* yellow, the outer purple.—Salt marshes; abundant. Often rendered unsightly by being covered with mud; but in higher situations a highly ornamental plant.—Fl. July — September. Perennial.



ÁSTER TRIPÓLIUM (*Sea Starwort*).

2. *A. Linosýris* (Flax-leaved Goldilocks).—A glabrous, erect, unbranched, herbaceous plant, 12—18 in. high, with leafy *stem:* linear entire *leaves* and a few *heads* of yellow *flowers*, with no ray, in a terminal

corymb.—Limestone cliffs; very rare.—Fl. August, September. Perennial.

* Other species occur occasionally, such as *A. salignus*, naturalised at Wicken Fen, Cambridgeshire; but they are probably garden escapes.

5. Erígeron (Flea-bane).—Differing from *Aster* mainly in having 2 or more rows of *ray-florets*. (Name from the Greek *éri*, early, *gerón*, old, from the early appearance of the grey pappus.)

1.* *E. canadénsé* (Canadian Flea-bane).—An erect, corymbosely-branched herbaceous plant, 1—2 feet high, with lanceolate ciliate *leaves* and numerous very small dingy yellow *heads*, with small purplish-white *ray-florets*, and a white *pappus*.—Waste places; a weed of local occurrence.—Fl. August, September. Annual.

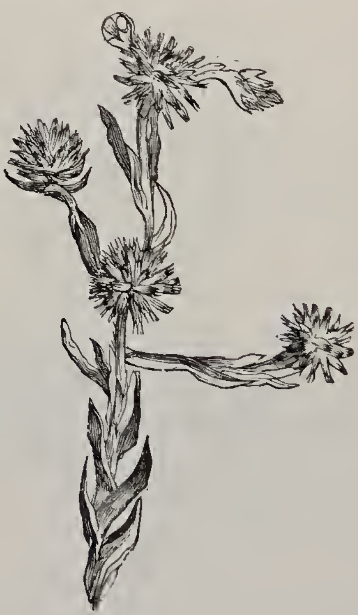
2. *E. ácré* (Blue Flea-bane).—A much branched, hairy plant, 1—2 feet high; *leaves* lanceolate, entire, obtuse; *branches* alternate, erect, bearing single *heads* which are corymbose and have a pale yellow *disk*, a dull pale blue-purple *ray*, and a very long, tawny *pappus*.—Dry places and walls; not common.—Fl. July, August. Biennial.

3. *E. alpínum* (Alpine Flea-bane).—A hairy plant, 4—8 in. high, with *leaves* mostly radical, lanceolate; and generally solitary largish *heads* with hairy *involucre*, and numerous, narrow, light purple *ray-florets*.—Breadalbane and Clova mountains; very rare.—Fl. July, August. Perennial.

6. Filágo (Cudweed).—Slender woolly plants, with small scattered entire *leaves*; *heads* minute, in axillary and terminal clusters; *bracts* few, membranous, long, pointed, imbricate; *receptacle* conica

with a few chaffy scales at its margin; *florets* few, all tubular, the outer ones without stamens; *pappus* of slender, silky hairs. (Name from the Latin *filum*, a thread, from the down covering the whole plant.)

1. *F. germánica* (Common Filago or Cudweed).—A singular little plant, 4—12 in. high, greyish; *stem* erect, cottony, terminating in a globular assemblage of *heads*, from the base of which two or more branches spring, which are similarly proliferous; *leaves* linear, acute, wavy; *heads* 20—40 in each cluster, obscurely 5-angled, reddish-brown; *bracts* with smooth, yellowish tips.—Dry gravelly places; common. From its curious mode of branching, this species was called by the old botanists *Herba impia* (the undutiful plant),



FILÁGO GERMÁNICA (*Common Filago*).

as if the young shoots were guilty of disrespect in overtopping the parent.—Fl. July, August. Annual.

2. *F. apiculáta* (Apiculate Cudweed).—A taller, more greenish species, with blunt apiculate *leaves*; *heads* larger than *F. germánica*, 10—20 in a cluster, prominently 5-angled, in clusters which often appear lateral from the development of only one proliferous branch, and are overtopped by 1 or 2 blunt leaves; *bracts* with smooth reddish tips.—Sandy places; rare. The whole plant has a smell of Tansy.—Fl. July, August. Annual.

3. *F. spathuláta* (Spathulate Cudweed).—Another closely allied species, whitish, shorter, branched lower down; *leaves* spathulate; *heads* larger, 8—15 in a cluster, prominently 5-angled, in clusters overtopped by 2—3 acute leaves; *bracts* with smooth yellow tips. —Dry fields; not common.—Fl. July, August. Annual.

4. *F. mínima* (Least Cudweed).—A smaller, erect, repeatedly forked, greyish plant, 4—6 high; *leaves* linear-lanceolate, acute, adpressed, cottony; *heads* 3—6 together in terminal and axillary clusters, brownish-yellow.—Dry gravelly places; common.—Fl. June —September. Annual.

5.* *F. gállica* (Narrow-leaved Cudweed).—A slender, repeatedly forked plant, with linear acute and afterwards revolute *leaves* longer than the yellowish *flower-heads* which are borne in axillary clusters of 2—6 together.—Sandy fields in Essex, Hertfordshire, and Buckinghamshire; not indigenous.—Fl. July—September. Annual.

7. ANTENNÁRIA (Everlasting).—Woolly plants with *flower-heads* diœcious or nearly so; *florets* all tubular; *pappus* of one row of hairs, those of the staminate florets club-shaped. (Name from the *antennæ* of a

butterfly which the pappus-hairs of the staminate florets resemble.)

1. *A. dioíca* (Cat's-foot, Mountain Everlasting, or Cudweed).—The only British species, a pretty little plant, 3—6 in. high, with numerous prostrate shoots; *leaves* spathulate, apiculate, green above, cottony below; *heads* 2—5, in a corymb, rendered conspicuous by the white or rose-coloured *involucre*, which is of the texture commonly termed *everlasting*.—Mountain heaths and sandy places; frequent, especially in the north.—Fl. June—August. Perennial.

ANTENNÁRIA DIOÍCA (*Mountain Everlasting*).

*8. Anáphalis is represented by *A. margaritácea*, the White Everlasting of gardens. It is an erect, half shrubby, corymbosely-branched, leafy, cottony plant, 2—3 feet high, with *runners ;* linear-lanceolate acute *leaves*, 3—5 in. long, smooth above ; and small *heads* of yellowish *flowers*, with white *involucres*, in a compound corymb. It is naturalised in South Wales, the Channel Islands, and elsewhere.—Fl. July, August. Perennial.

9. GNAPHÁLIUM (Cudweed).—Woolly plants with small *heads* of tubular florets clustered in terminal or axillary fascicles ; *bracts* adpressed, coloured ; *receptacle* flat, naked ; *outer florets* without stamens ; *anthers* tailed ; *pappus* of one row of slender, silky hairs. (Name from the Greek *gnaphálion*, referring to the woolly down.)

1. *G. uliginósum* (Marsh Cudweed).—A small plant, 3—6 in. high, much branched, woolly, white ; *leaves* narrow, downy, overtopping the terminal clusters of *heads ; bracts* glossy, yellowish-brown.—Wet sandy places, especially where water has stood during winter ; very common.—Fl. July—September. Annual.

2. *G. lúteo-álbum* (Jersey Cudweed).—A taller, less branched species with *heads* in dense, leafless corymbs, pale straw-coloured *bracts*, and red-tinged *florets*, is found chiefly in the Channel Islands.—Fl. July, August. Annual.

3. *G. sylváticum* (Wood Cudweed).—A white, cottony plant about a foot high, with an unbranched *stem ;* long, narrow, acute *leaves* ; and a leafy, distant spike of yellowish *heads*.—Woods and gravelly heaths ; common.—Fl. July—September. Perennial.

4. *G. norvégicum* (Highland Cudweed).—Differing in having broader *leaves*, a close spike of *heads*, and brown *bracts*.—Occurs only on the mountains of the Highlands.—Fl. August. Perennial.

5. *G. supínum* (Dwarf Cudweed).—A low tufted

plant, with *leaves* mostly radical, and almost leafless scapes bearing 1—5 *heads*, also confined to Highland mountains.—Fl. July, August. Perennial.

10. ÍNULA (Elecampane).—Mostly stout, stiff, erect plants; *leaves* scattered, simple; *heads* yellow, with a ray; *bracts* herbaceous, imbricate in many rows; *receptacle* naked; *anthers* with two bristles at the base; *pappus* of one row of hairs. (Name probably a corruption of *Helénula*, Little Helen.)

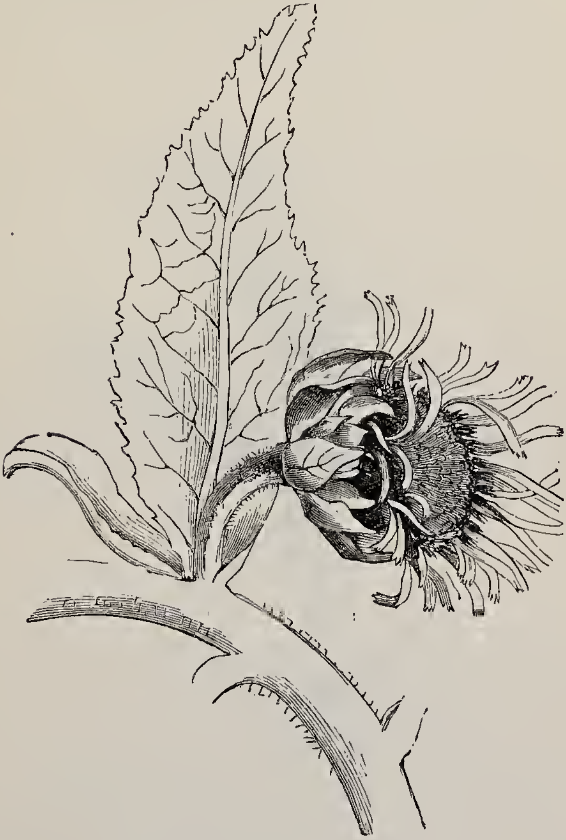
1. *I. Helénium* (Elecampane).—A stout plant, 3—5 feet high, slightly branched; *leaves* oblong, wrinkled, downy beneath, toothed, the lower ones long-stalked, a foot or more in length, the upper ones sessile, amplexicaul; *heads* terminal, solitary, or nearly so, 3 in. across, bright yellow; *bracts* broadly ovate, downy.—Meadows; not common and often only a naturalised escape. It was formerly cultivated as a tonic, and its rhizome is still candied and furnishes the *Vin d'Aulnée* of the French, being considered valuable in diseases of the lungs.—Fl. July, August. Perennial.

2. *I. Conýza* (Ploughman's Spikenard).—An erect, downy plant, 2—5 feet high; *leaves* dull green, ovate-lanceolate, downy, toothed, 3—5 in. long, the lower ones stalked; *heads* in a branched corymb, numerous, dingy yellow, with leaf-like *bracts*, the outer of which are blunt and revolute, and inconspicuous *ray-florets*.—Banks chiefly on a calcareous soil; not uncommon.—Fl. July—September. Biennial.

3. *I. salicína*, a nearly glabrous species, 12—18 in. high, with narrow, toothed *leaves* and terminal, solitary *heads*, 1½ in. across, is found only on the shores of Lough Derg, Galway.

4. *I. crithmoídes* (Golden Samphire).—Well distinguished from every other British plant, glabrous, yellow-green, 6—18 in. high, slightly branched, with numerous very narrow, fleshy, blunt or 2—4-pointed

leaves, and solitary golden-yellow *heads*, 1 in. across. —Salt marshes and sea-cliffs in the west; rare.—Fl. July, August. Perennial.

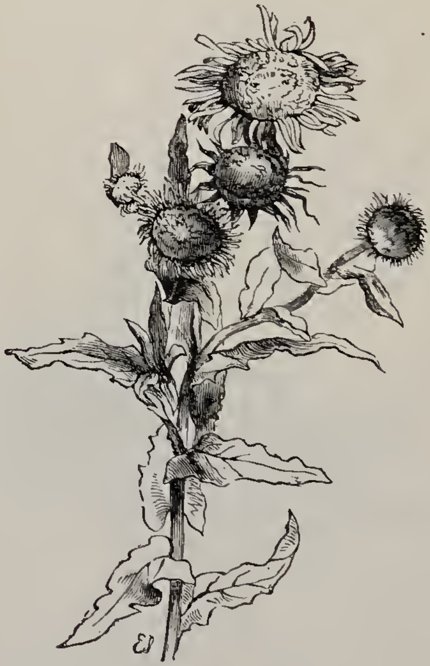


ÍNULA HELÉNIUM (*Elecampane*).

11. Pulicária (Flea-bane).—Differing from *Inula* chiefly in having the *bracts* loosely imbricate in a few rows, and an outer row of short scales to the *pappus*. (Name from the Latin *pulex*, a flea, the strong smell

of the plant, or its pollen, being supposed to drive away fleas.)

1. *P. dysentérica* (Common Flea-bane).—From 1—2 feet high, growing in masses, and well marked by its woolly *stem ;* soft, hoary, oblong, cordate, amplexicaul *leaves ;* and few terminal, large, flat, golden-yellow *heads*, with bristle-like *bracts* and numerous narrow *ray-florets* longer than the disk.—Moist places ; common.—Fl. July—September. Perennial.



PULICÁRIA DYSENTÉRICA (*Common Flea-bane*).

2. *P. vulgáris* (Small Flea-bane).—Resembling the last, but not more than half the size, nor by any means so hoary ; *stem* hairy ; *leaves* lanceolate, narrow

at the base, sessile, hairy; *heads* nearly solitary, ½ in. across, with very short, erect *ray-florets.*—Sandy heaths, where water has stood, in the south, but not found in Scotland or Ireland; not common.—Fl. August, September. Annual.

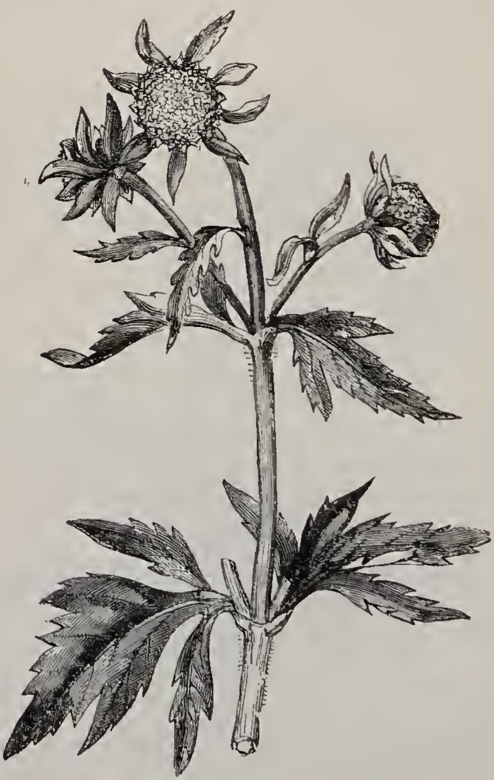
*12. Xánthium (Burweed).—A curiously anomalous genus with monœcious *heads*, the staminate ones having a few *bracts* in 1 row, a scaly *receptacle*, and numerous tubular *florets* with free *anthers*; whilst the carpellate ones consist of 2 florets, enclosed within a spinous *involucre* which hardens over their 2 fruits, and having no corolla. (Name from the Greek *xanthos*, yellow.)

1.* *X. Strumárium* (Common Burweed).—With cordate, 3-lobed, toothed *leaves* and two straight *beaks* to the *fruit*, and 2* *X. spinósum* (Spinous Burweed) with three spines at the base of each *leaf*, and a single straight *beak* to the *fruit*, are both casual escapes. —Fl. August, September. Annual.

13. Bídens (Bur-Marigold).—Glabrous plants with *leaves* mostly opposite; *heads* nearly solitary, yellow; *bracts* in 2 or 3 rows, the outer spreading and often leafy; *receptacle* flat and scaly; *ray-florets* generally absent, or, if present, in 1 row; neuter; *fruit* compressed, angular, the angles ending in a *pappus* of 2—5 barbed bristles. (Name from the Latin *bi*, double, *dens*, a tooth, the teeth on the fruit being themselves toothed.)

1. *B. cérnua* (Nodding Bur-Marigold).—A somewhat succulent plant, 1—2 feet high, with simple, lanceolate, serrate, glabrous *leaves*, and terminal, solitary, drooping, button-like *heads* of brownish-yellow *florets*, with several leafy *bracts*, but rarely any *ray-florets.* The *fruit*, which forms a pretty object for

the polariscope, is oblong and terminates in 3 or 4 stiff bristles, each thickly set with minute recurved barbs, so as to take a firm hold on the coat of any animal which comes in contact with them.—Watery places; frequent.—Fl. July—October. Annual.



BÍDENS TRIPARTÍTA (*Trifid Bur-Marigold*).

2. *B. tripartíta* (Trifid Bur-Marigold).—Distinguished from the last by its stalked 3-partite *leaves;* smaller, nearly erect *heads,* which more often have *ray-florets;* and 2, or rarely 3, bristles on the *fruit.*

—Watery places; frequent.—Fl. July—September. Annual.

*14. Galinsóga, represented by *G. parviflóra*, an escape from Kew Gardens, now naturalised in many places, is a South American genus, with opposite, broad, serrate *leaves* and small *heads*, the 4—6 short, broad, white *ray-florets* of which, surrounding the yellow *disk*, might lead at first to the heads being mistaken for flowers of some other Order. (Named in honour of *Don M. de Galinsoga*, a Spanish botanist.) —Fl. July—October. Annual.

ACHILLÉA PTÁRMICA (*Sneezewort*).

15. ACHILLÉA (Yarrow).—Stiff plants ; *leaves* scattered ; *heads* in corymbs, with few, ligulate, broad, white *ray-florets ;* flat, scaly *receptacle ; fruit* compressed ; no *pappus.* (Named after *Achilles,* with reference to supposed healing properties.)

1. *A. Millefólium* (Common Yarrow or Milfoil).—*Stems* very tough, angular, 6—11 in. high ; *leaves* bipinnatifid, with a lanceolate general outline, woolly or slightly hairy ; *leaflets* cut into hair-like segments ; *heads* small, white, pink, or red, in dense terminal corymbs.—Pastures and roadsides ; very common. The plant has a strong, slightly aromatic odour, and is said to have the property of healing wounds. Its clusters of flower-heads might be supposed, by an unpractised eye, to belong to one of the Umbellíferæ.—Fl. May—September. Perennial.

2. *A. Ptármica* (Sneezewort).—Somewhat taller and more slender than the last, from which it may be at once distinguished by its undivided, linear-lanceolate, serrate, glabrous *leaves* and larger *heads* of flowers, of which both *disk* and *ray* are white.—Moist meadows, heaths, &c. ; common.—Fl. July, August. Perennial.

16. DIÓTIS (Cotton-weed).—An erect branched woolly plant ; *leaves* scattered ; *heads* sub-globose, yellow ; *receptacle* flat, scaly ; *florets* all tubular and perfect ; *corolla* with two ears or spurs at its base, which remain and crown the *fruit ;* no *pappus.* (Name from the Greek *di,* double, *ous, ōtos,* an ear, from the structure of the fruit.)

1. *D. candidíssima* (Seaside Cotton-weed).—The only species. The woody *rhizome* runs deeply into the sand ; the many stout, ascending *stems,* about a foot high, are branched above, and thickly set with sessile, oblong, blunt *leaves,* which, as well as the rest of the plant, are covered with thick white cotton,

and almost hide the small terminal *heads* of yellow *florets.*—Sandy sea-shores; rare.—Fl. August, September. Perennial.

17. Anthemis (Chamomile). — Strongly-scented herbs; *leaves* scattered, bi-pinnatifid; *heads* solitary; *receptacle* flat or convex, scaly; *bracts* with membranous margins, imbricate, in few rows; *ray-florets* in 1 row, ligulate, oblong, generally white, or rarely absent; *fruit* not compressed; *pappus* represented by a membranous ring. (Name from the Greek *anthos*, a flower, from the value of its flower-heads as a medicine.)

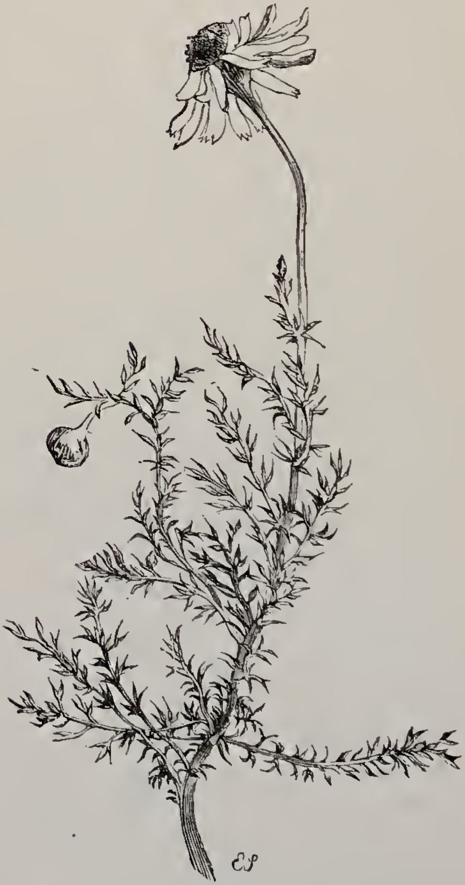
1.* *A. tinctória* (Ox-eye Chamomile).—A much-branched, cottony plant, 1—2 feet high, with much-divided *leaves* and large *heads*, with a hemispherical *receptacle* and both *ray* and *disk* bright yellow, resembling *Chrysánthemum ségetum.*—Fields; not indigenous.—Fl. July, August. Biennial.

2. *A. Côtula* (Stinking Chamomile).—Distinguished by its strong disagreeable odour; upright, branched *stem; leaves* repeatedly cut into hair-like segments, glandular-dotted, smooth; *heads* long-stalked, with long conical *receptacle,* white, neuter *ray-florets* and yellow *disk*.—Waste places; common. Very acrid, blistering the hands of those who gather it.—Fl. June—September. Annual.

3. *A. arvénsis* (Corn Chamomile).—A hoary or downy, much-branched plant; *leaves* cut into hair-like segments, but not dotted with glands; *heads* as in the last, but with conical *receptacle* and carpellate *ray-florets.*—Borders of cultivated fields; frequent.—Fl. June—August. Annual.

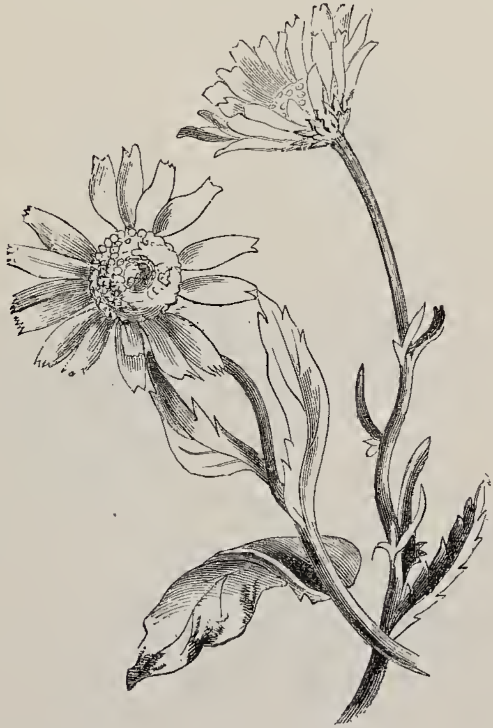
4. *A. nóbilis* (Common Chamomile).—*Stems* prostrate, much branched; *leaves* repeatedly cut into hair-like segments, slightly downy; *heads* as in the preceding, but drooping before expansion.—Gravelly

and sandy places; frequent. Distinguished by its pleasant aromatic smell, resembling that of fresh apples, whence is derived its name of *Chamomile*, which in Greek signifies *ground apple.* The whole plant is very bitter, and is a valuable tonic.—Fl. July—September. Perennial.



Ánthemis nóbilis (*Common Chamomile*).

18. CHRYSÁNTHEMUM (Ox-eye).—Herbs or shrubs; *leaves* toothed or lobed, not decompound; *heads* solitary; *bracts* with membranous margins, imbricate; *receptacle* flat or convex, naked; *ray-florets* in 1 row, ligulate, carpellate, white or yellow; no *pappus*.



CHRYSÁNTHEMUM SÉGETUM (*Yellow Ox-eye*).

(Name from the Greek *chrusos*, gold, *anthos*, a flower.)

1. *C. ségetum* (Yellow Ox-eye, Corn Marigold).—Glabrous, glaucous; *leaves* obovate or oblong, acute, toothed and lobed, the lower pinnatifid and stalked, the upper amplexicaul; *ray-florets* golden-yellow.—

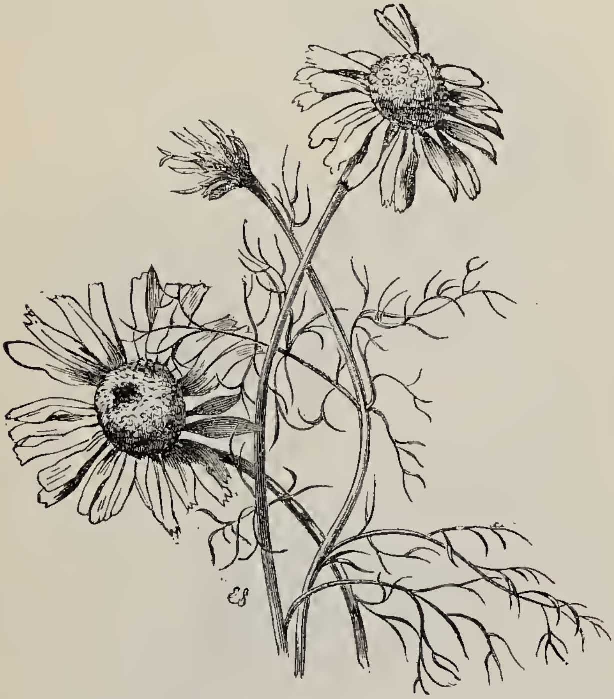
Cultivated fields; abundant. The brilliant, golden blossoms contrast beautifully with the scarlet Poppies and blue Cornflowers.—Fl. June, July, and, in summer-ploughed fields, again in October and November. Annual.

2. *C. Leucánthemum* (Ox-eye Daisy, Moon Daisy).—Erect, slightly branched, glabrous or nearly so, but not glaucous; *lower leaves* stalked and auricled, *upper* sessile, pinnatifid at the base; *bracts* with a narrow dark purple membranous margin; *ray-florets* white.—Meadows; abundant. Almost as well known as the common daisy, and a great favourite with children, who sometimes string the flower-heads on a stout grass-straw, or bit of wire, making a very fair imitation of the plume formerly worn by soldiers. The plant is said to be destructive to fleas.—Fl. June—August. Perennial.

3.* *C. Parthénium* (Common Feverfew).—Pubescent, erect, branched above, 1—2 feet high; *leaves* stalked, pinnate; *leaflets* pinnatifid and deeply cut; *heads* many, corymbose, ½—¾ in. across; *receptacle* convex; *ray-florets* white, short and broad.—Waste-ground; not very common. Well marked by its repeatedly cut, curled, delicate green leaves which are conspicuous in mid-winter, and its numerous small flower-heads. The whole plant has a powerful and not unpleasant odour, which is said to be particularly offensive to bees. The English name is a corruption of *Febrifuge*, from its tonic properties.—Fl. July—September. Perennial.

19. Matricária (Wild Chamomile, Feverfew).—Branched plants; *leaves* much divided into narrow segments, *bracts* imbricate, in few rows; *receptacle* broad, naked, becoming conical after flowering; *ray-florets* in one row, ligulate, white, or rarely absent; no *pappus*.

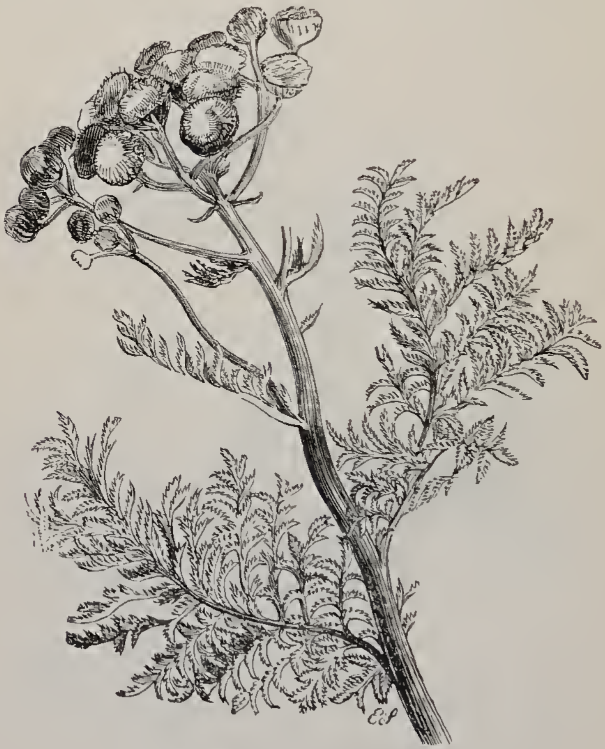
1. *M. inodóra* (Corn Feverfew, Scentless May-weed).—Scentless, glabrous; *stem* erect, branched, angular; *leaves* sessile, repeatedly cut into numerous hair-like segments; *heads* solitary, 2 in. across; *bracts* toothed and edged with brown; *receptacle* hemispherical, becoming conical; *ray-florets* white, ultimately reflexed.—Fields; abundant.—Fl. June—October. Annual or Biennial.



MATRICÁRIA INODÓRA (*Corn Feverfew, Scentless May-weed*).

2. *M. marítima* (Sea Feverfew).—Less erect and more fleshy; *leaf-segments* long; *bracts* with broad dark margins.—Sea-coast in the North of Scotland. Perennial.

3. *M. Chamomílla* (Wild Chamomile).—Aromatic, much-branched, glabrous plant; *leaves* bipinnate, repeatedly cut into very narrow hair-like segments; *heads* in corymbs, ½—¾ in. across; *bracts* without membranous margins; *receptacle* conical, elongating during fruiting, hollow; *ray-florets* white, reflexed directly after flowering, or absent.—Cornfields; frequent. Its smell is fainter than that of *Ánthemis nóbilis,* and the bracts and hollow receptacle



TANACÉTUM VULGÁRÉ (*Common Tansy*).

serve to distinguish it from *A. Cótula* and *Matricária inodôra.*—Fl. June—August. Annual.

*20. Cótula, represented by *C. coronopifólia,* is a genus of branched annuals, with pinnatifid *leaves*, and small solitary *heads* of yellow tubular *florets*, with 4-lobed *corollas*. This species is glabrous, succulent, and creeping, with shining leaves and erect peduncles 1—2 in. high. It is naturalised near Birkenhead.

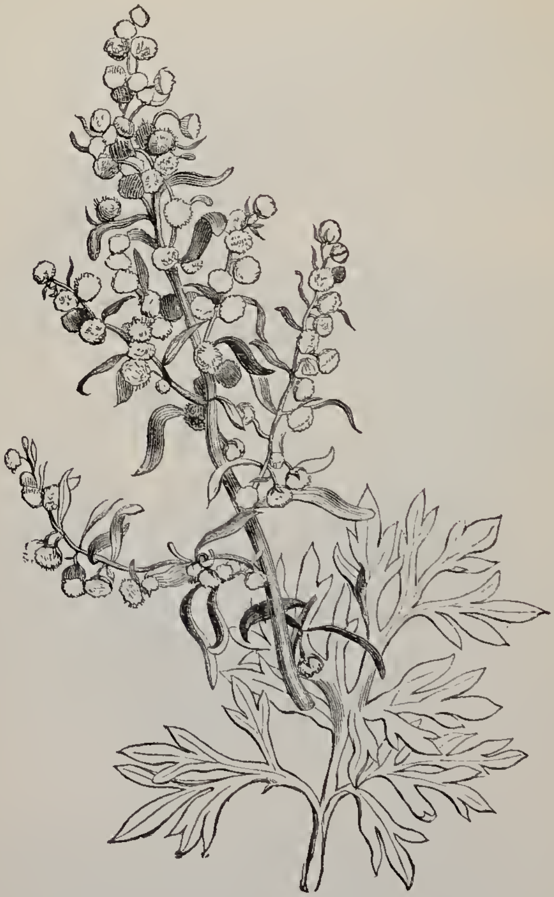
21. Tanacétum (Tansy).—Strong-scented herbs or undershrubs; *leaves* scattered, much divided; *heads* solitary or corymbose, sub-globose, yellow; *bracts* membranous at their edges; *receptacle* convex, naked; *florets* all tubular; *fruit* angular, crowned with a lobed membranous disk. (Name said to be from the Greek *athánaton*, immortal.)

1. *T. vulgáré* (Common Tansy).—The only British species, 2—3 feet high; *stem* angular, leafy; *leaves* deeply bipinnatifid, serrate; *heads* many, bright yellow, button-like, in a terminal corymb.—Hedges and waste ground; common. The whole plant is bitter and aromatic, and is not only used in medicine, but was the principal ingredient in a nauseous dish called *Tansy Pudding.* — Fl. August, September. Perennial.

22. Artemísia (Wormwood).—Herbs and undershrubs with a bitter or aromatic taste; *leaves* scattered; *heads* small, in racemes or panicles; *bracts* with membranous margins; *receptacle* naked, narrow; *florets* all tubular; no *pappus*. (Name from *Ártemis*, the Diana of the Greeks.)

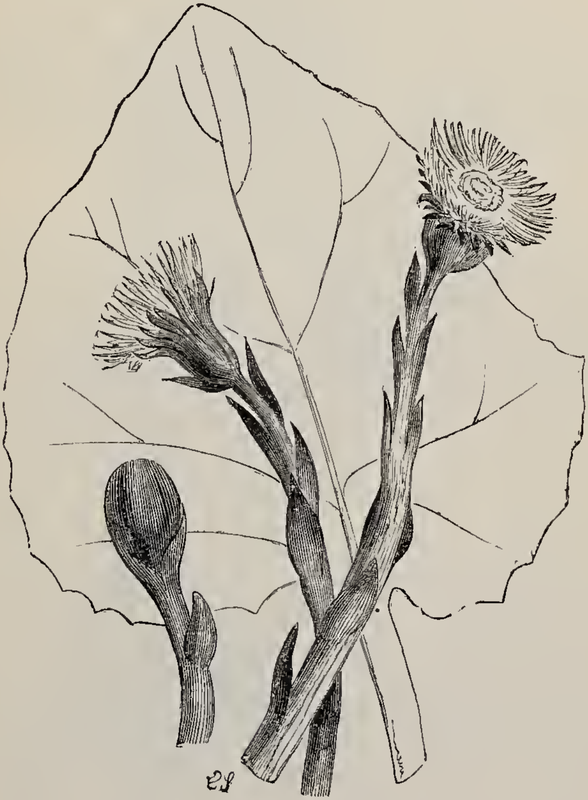
1. *A. Absínthium* (Common Wormwood). — A bushy plant, 1—3 feet high, with silky *stems; leaves*

twice pinnatifid, with bluntish segments, silky on both sides; *heads* many, small, panicled, hemispherical, drooping, dull yellow.—Waste ground; common. Bitter and aromatic, and much used in rural districts as a tonic.—Fl. July—September. Perennial.



ARTEMÍSIA ABSÍNTHIUM (*Common Wormwood*).

2. *A. vulgáris* (Mugwort).—Taller and more slender than the last, and well distinguished by the absence of aromatic odour, and the *leaves* which are green above and white with wool beneath and pinnatifid with acute segments; *heads* reddish or brownish-yellow.—Hedges, and waste places; abundant. An infusion or tea of this plant is a rural remedy for rheumatism.—Fl. July—September. Perennial.



TUSSILÁGO FÁRFARA (*Colt's-foot*).

3. *A. campéstris* (Field Wormwood). — *Stems* prostrate until flowering; *leaves* pinnatifid, with very slender acute segments, silky when young, but becoming glabrous.—Sandy heaths in Norfolk and Suffolk; rare.—Fl. August, September. Perennial.

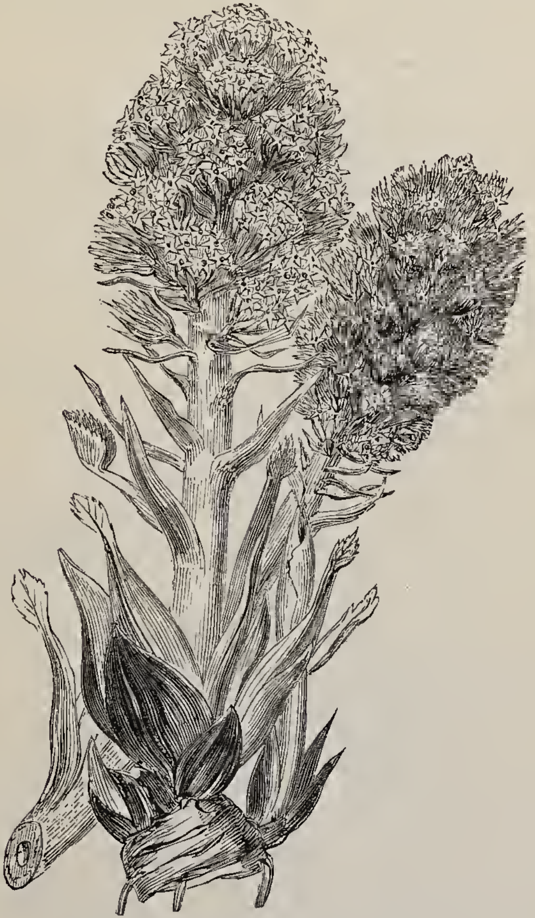
4. *A. marítima* (Sea Wormwood).—Somewhat resembling *A. Absínthium*, but smaller; *leaves* twice pinnatifid with many, very narrow, blunt segments, with white down on both sides; *heads* in racemes, drooping or erect, reddish.—Salt marshes; frequent. —Fl. July—September. Perennial.

23. TUSSILÁGO (Colt's-foot). — *Rhizome* creeping; *leaves* large, radical; *heads* solitary, yellow, many-flowered; *bracts* narrow, in 1 row; *receptacle* naked; *ray-florets* narrow, in several rows; *disk-florets* few; *pappus* of slender, silky hairs. (Name from the Latin *tussis*, a cough, from the use to which it is applied.)

1. *T. Fárfara* (Colt's-foot). — The only species; *leaves*, which do not appear until the flower-heads are withered, roundish, cordate, and angular, cobwebby above, with dense, white down beneath; *peduncles* with scale-like bracts, elongating after flowering; *heads* bright yellow, about 1 in. across, drooping before expansion; *pappus* snow-white.—Clayey fields; abundant. A pernicious weed, the leaves of which are made into cigars for asthmatic persons. The down on their under surfaces was formerly used as tinder, and the goldfinch frequently lines its nest with the pappus.—Fl. February, March. Perennial.

24. PETASÍTES (Butter-bur). — *Leaves* large, broad, radical, produced after the flowers; *heads* numerous, purplish or white, in a raceme, many-flowered; *florets* all tubular, sub-diœcious. (Name from the Greek *pétasos*, an umbrella, from the large size of the leaves.)

1. *P. officinális* (Common Butter-bur).—The only indigenous species, the largest, and, where it abounds,



PETASÍTES VULGÁRIS (*Common Butter-bur*).

the most pernicious of all the weeds which this country produces. *Leaves* kidney-shaped, 1—3 feet in diameter, downy, appearing after the flowers;

heads dull lilac, many flowered, in a raceme, on a short fleshy *peduncle* with sheathing *bracts* terminating in small blades.—Marshy meadows and river-banks; common. Planted near beehives by Swedish farmers, on account of its early flowering.—Fl. January—March. Perennial.

* *P. frágrans* (Winter Heliotrope), with cordate *leaves* and a loose panicle of a few dingy but sweet-scented *heads* with ligulate fertile *florets*, flowering very early in January, and **P. albus* (White-flowered Butter-bur), with much smaller, deeply scalloped *leaves* and white *flowers*, are common in shrubberies, almost hiding the ground with their leaves, thriving beneath the shade of trees and shrubs, but overpowering all herbaceous plants, and eventually, it is said, even the shrubs themselves. Both are occasionally naturalised, the former in the south, the latter in Scotland.

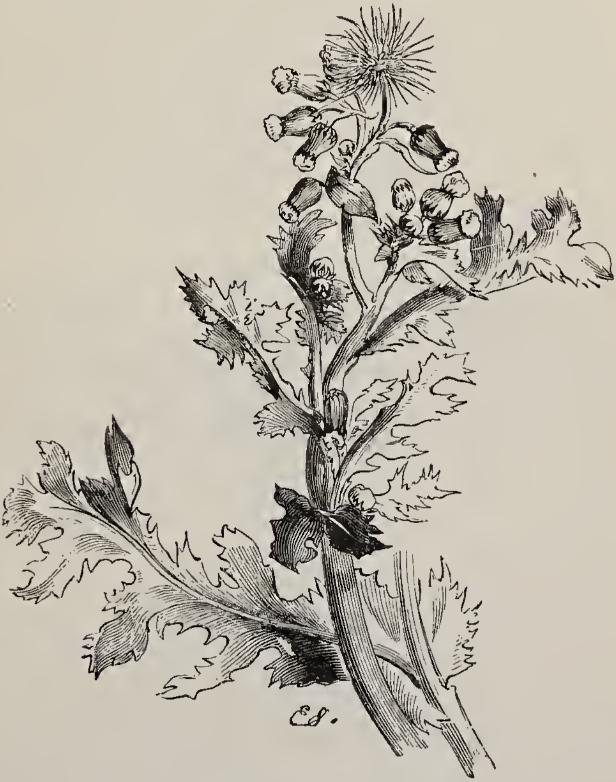
*25. DORONÍCUM (Leopard's-bane).—*Radical leaves* stalked; *cauline leaves* scattered, amplexicaul; *heads* terminal, nearly solitary, large, yellow; *bracts* in 2 or 3 rows, narrow, acute, equal; *receptacle* conical; *ray-florets* in 1 row, ligulate, with no pappus; *pappus* of disk-florets of several rows of stiff hairs. (Name of uncertain etymology.)

1.* *D. Pardaliánches* (Great Leopard's-bane).—*Stem* 2—3 feet high, erect, solitary, hairy, hollow; *leaves* cordate, soft; the earlier *flower-heads* overtopped by the later.—Damp, hilly woods; rare, not indigenous.—Fl. May—July. Perennial.

2.* *D. plantagíneum* (Plantain-leaved Leopard's-bane), differing in having ovate *leaves* and solitary *heads* of flowers, is very rare and not indigenous.—Fl. June, July. Perennial.

26. SENÉCIO (Groundsel, Ragwort).—A large genus

of herbs and undershrubs; *leaves* scattered; *heads* usually yellow, corymbose, or solitary; *bracts* in 1 row, sometimes with a few smaller scales at their base, narrow, adpressed, herbaceous; *receptacle* naked; *ray* sometimes absent; *pappus* of several rows of soft, slender hairs. (Name from the Latin *senex*, an old man, from the white or grey hairy pappus.)



SENÉCIO VULGÁRIS (*Common Groundsel*).

1. *S. vulgáris* (Common Groundsel).—*Leaves* half-amplexicaul, deeply pinnatifid, toothed, not sticky;

heads few, drooping; *outer bracts* very short, with black points; *ray* absent.—A common weed in cultivated ground; a favourite food of many small birds.—Fl. all the year round. Annual.

2. *S. sylváticus* (Mountain Groundsel.)—Distinguished from the last by its larger size, it being 1—2 feet high and branched; by being fetid and slightly sticky; by its more copiously cut, pinnatifid, often hoary *leaves*, with narrow, toothed lobes; and by its many conical rather than cylindrical *heads* of dull yellow *flowers*, which are in a corymb and sometimes have a few small rolled back *ray-florets.*—Dry, gravelly places; common.—Fl. July—September. Annual.

3. *S. viscósus* (Viscid Groundsel).—Differing from the preceding in being more viscid, with glandular hairs, and in having fewer *heads* with outer *bracts* half as long as the inner ones.—Dry waste places; local.—Fl. July—September. Annual.

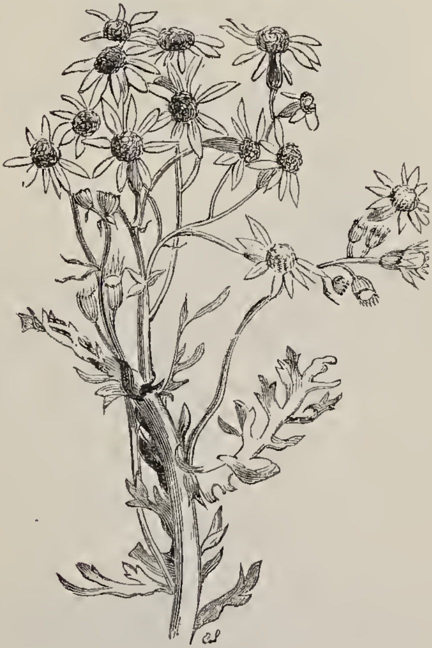
4.* *S. squálidus* (Inelegant Ragwort).—Inappropriately named, as it is by far the prettiest British species. About a foot high, much branched; *leaves* irregularly lyrately pinnatifid with narrow segments, glabrous; *heads* few, in a very loose corymb; *outer bracts* few and very short; *ray* spreading.—On old walls at Oxford, Bideford, Cork, &c.; but not indigenous.—Fl. June—October. Annual.

5. *S. erucifólius* (Hoary Ragwort).—About 2 feet high, erect; *stems* angular, cottony, with curled hairs; *leaves* regularly pinnatifid, with slightly rolled back narrow lobes, cottony beneath; *heads* in a dense corymb; *outer bracts* half as long as the inner; *ray* spreading.—Dry banks on a limestone or chalky soil; not uncommon.—Fl. July, August. Perennial.

6. *S. Jacobǽa* (Common Ragwort).—Almost glabrous; *stem* erect, 2—3 feet high; *leaves* pinnatifid, glabrous, generally lyrate, the upper ones auricled; *heads* large, bright yellow, in a dense corymb; *ray*

spreading, or rarely absent.—Waste places; abundant. —Fl. June—September. Perennial.

7. *S. aquáticus* (Marsh Ragwort).—Resembling the last, but of more slender, looser habit; *radical leaves* stalked, undivided, toothed; *cauline leaves* irregularly lyrately pinnatifid; *heads* in a loose corymb. —Wet places; abundant.—Fl. July, August. Biennial.



SENÉCIO JACOBÆA (*Common Ragwort*).

8.* *S. saracénicus* (Broad-leaved Ragwort).—*Stem* erect, 3—5 feet high, smooth, solid; *leaves* lanceolate, irregularly serrate, sessile, or nearly so, glabrous; *heads* many, in loose downy corymbs; *ray-florets* few.—Moist meadows; locally naturalised.—Fl. July, August. Perennial.

9. *S. paludôsus* (Great Fen Ragwort).—A large aquatic plant, 5—6 feet high; *stem* slightly cottony, hollow; *leaves* lanceolate, sharply serrate, cottony beneath; *heads* in loose corymbs; *ray-florets* many.—Fens in the eastern counties; rare.—Fl. May—July. Perennial.

10. *S. palústris* (Marsh Fleawort).—A stout plant, 2—3 feet high, shaggy; *stem* hollow; *leaves* sessile, broadly lanceolate, half-clasping, the lower ones wavy and toothed; *heads* many, in a crowded corymb; with no outer scales to the *involucre; ray* spreading.—Fens in the eastern counties; rare.—Fl. June, July. Biennial.

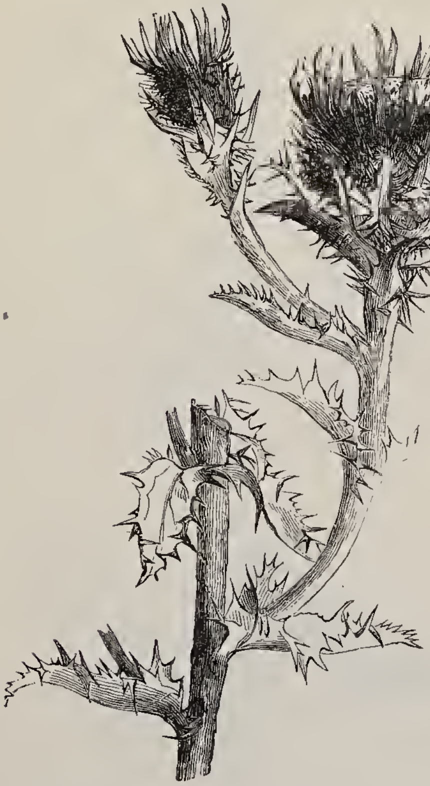
11. *S. campéstris* (Field Fleawort). — A small, shaggy plant, 6—8 in. high, with an unbranched *stem; radical leaves* shortly stalked, oblong, nearly entire; *cauline leaves* lanceolate; *heads* 1—6 in a simple corymb. — Chalky downs; rare.—Fl. May, June. Perennial.

12. *S. spathulæfólius* (Maritime Fleawort).—An allied species, 1—3 feet high, shaggy and unbranched, with spathulate *radical leaves* and large, clasping *cauline leaves.*—Occurs on rocks near Holyhead.—Fl. June, July Biennial or Perennial.

27. CARLÍNA (Carline Thistle). — Stiff, spinous plants; *leaves* pinnatifid; *outer bracts* leafy, spreading, with spinous teeth, *inner* longer, narrow, chaffy; *receptacle* flat, deeply pitted; *florets* all tubular; *corolla* 5-toothed; *anthers* tailed; *fruit* silky, with bifid hairs; *pappus* in 1 row, branched and feathery. (Name, the same as *Carolína*, from a tradition that the root of one species, *C. acaúlis*, was shown by an angel to *Charlemagne* as a remedy for the plague which prevailed in his army.)

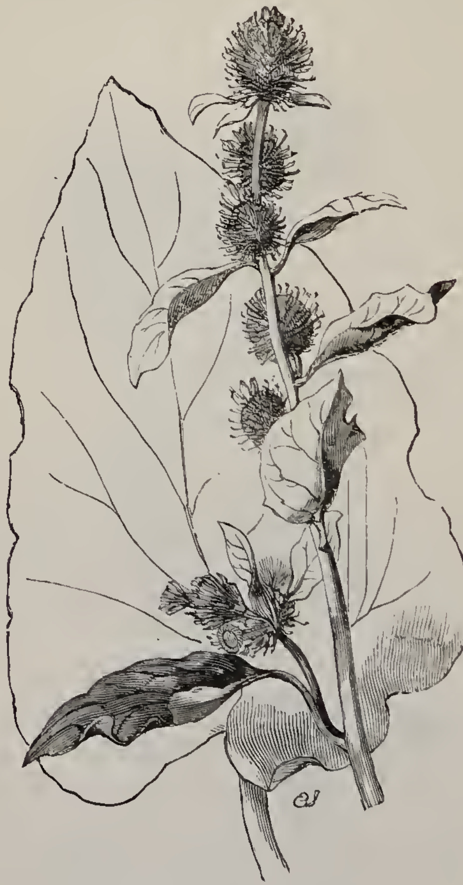
1. *C. vulgaris* (Common Carline Thistle).—The only British species, readily distinguished from every

other British Thistle by the long *inner bracts* of the *involucre*, which are straw-coloured and glossy, and spread in a radiate manner so as to resemble petals. In dry weather they lie flat, but when the atmosphere



CARLÍNA VULGÁRIS (*Common Carline Thistle*).

is moist, they rise and form, as it were, a penthouse over the florets. Their texture is like that of Everlasting Flowers; hence they scarcely alter their appearance when dead, and, as the whole plant is remarkably durable, they often retain their form and position till the succeeding spring. On the Continent the large white flower-head of one species,



Árctium mínus (*Lesser Burdock*).

C. acaúlis, is often nailed upon cottage doors by way of a hygrometer, as it closes before rain.—Dry heaths. —Fl. June—October. Biennial.

28. Árctium (Burdock).—Stout, erect, branching plants, with very large, stalked, cordate *leaves*; a globose *involucre* of long, stiff, spreading, spinous, hooked *bracts*; flat, scaly *receptacle*; *florets* all tubular and perfect; *anthers* tailed; *pappus* in several rows of short, simple hairs. (Name from the Greek *arktos*, a bear, from the rough burs.)

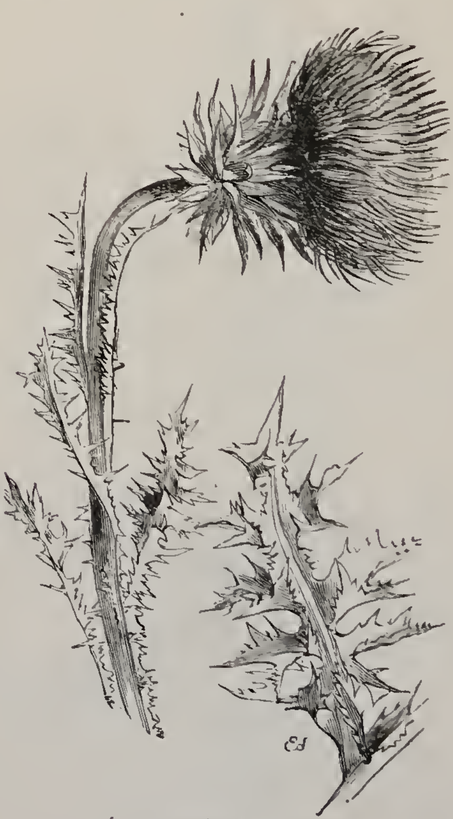
1. *A. május* (Great Burdock).—A large and stout herbaceous plant, remarkable for the picturesque character of its large, wavy *leaves*, which are often introduced by artists into the foreground of their landscapes. The *petioles* are solid; the *flower-heads* long-stalked, in a loose corymb, hemispherical, very large; *involucre* glabrous and green, or sometimes interwoven with a white, cottony substance; *florets* purplish-red.—Waste places; not uncommon. The hooked spines of the involucre attach the heads when in fruit to the coats of animals, so that they are conveyed to a distance.—Fl. July, August. Biennial.

2. *A. nemorósum* (Wood Burdock).—A smaller species; *leaves* coarsely crenate; *petioles* hollow; *heads* smaller, sub-sessile, ovate, in a raceme, usually 3 together on a branch; *heads* webbed.—Local.—Fl. July, August. Biennial.

3. *A. mínus* (Lesser Burdock).—A still smaller form, with coarsely-toothed, *radical leaves*; hollow *petioles*; and shortly-stalked, globular *heads*, not exceeding $\frac{3}{4}$ in. across, sub-racemose; *involucre* green, slightly webbed.—Waste places; the commonest form.—Fl. July, August. Biennial.

4. *A. intermédium* (Intermediate Burdock).—A form of intermediate size, about 3 feet high, with crenate *radical leaves*, a slender tube in the *petioles*, and slightly-stalked, sub-racemose, hemispherical *heads*, twice as large as those of *A. mínus*, with purplish and usually much webbed *involucres*.—Waste places; not uncommon.—Fl. July, August. Biennial.

29. **Cárduus** (Thistle).—Erect herbs; *leaves* spinous-toothed, decurrent, forming very spinous wings to the stem; *involucre* globose, of many, imbricate, spinous *bracts*; *receptacle* deeply pitted, scaly; *florets* all tubular; *filaments* free, hairy; *fruit* compressed; *pappus* in many rows of long, equal, shining, white hairs. (Name, the Latin name of the group.)

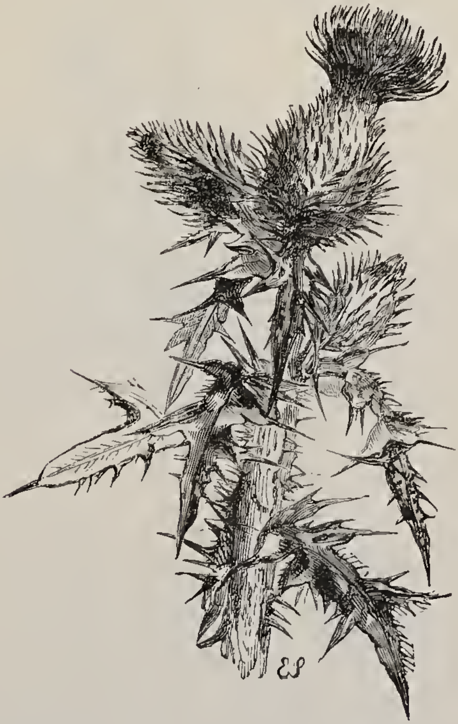


CÁRDUUS NÚTANS (*Thistle*).

1. *C. pycnocéphalus* (Slender-flowered Thistle).—*Stems* 2—4 feet high, slightly-branched, hoary, with

broad, continuous, deeply-lobed, spinous wings; *leaves* cottony beneath; *heads* many, clustered, cylindrical, small; *bracts* glabrous, subulate, very long, erect; *florets* pink.—Sandy waste places, especially near the sea; frequent.—Fl. June—August. Biennial.

2. *C. nútans* (Musk Thistle).—A very handsome plant, about 2 feet high, with a furrowed, cottony *stem*, interruptedly winged; *leaves* deeply-lobed, spinous, woolly on the veins beneath; *heads* large, solitary, drooping; *bracts* lanceolate, spinous-pointed, cottony, the outer ones reflexed; *florets* crimson.—



CNÍCUS LANCEOLÁTUS (*Spear Plume-Thistle*).

Waste places, especially on chalk downs; frequent. The flowers have a powerful musky odour.—Fl. May —October. Biennial.

3. *C. críspus* (Welted Thistle).—A branched, very spinous plant, 3—4 feet high; *stem* continuously winged; *heads* small, erect, clustered, roundish; *bracts* linear, erect, or spreading, webbed, slender; *florets* deep purple, or sometimes white. — Fl. June — August. Annual or Biennial.

30. Cnícus (Plume-Thistle).—Differing from *Cárduus* mainly in having a feathery *pappus*. (Name from the Greek *knizo*, I prick.)

1. *C. lanceolátus* (Spear Plume-Thistle).—*Stem* 2—5 feet high, winged by the decurrent spinous leaves; *leaves* pinnatifid, with bifid lobes, the segments lanceolate, entire, and ending in a strong spine, white and downy beneath; *heads* terminal, mostly solitary, sometimes 2 or 3 together, stalked, egg-shaped, about an inch across; *bracts* lanceolate, spinous, spreading, woolly; *florets* dull purple.—Waste places and hedges; abundant.—Fl. July—October. Biennial.

2. *C. erióphorus* (Woolly-headed Plume-Thistle).—*Stem* 3—5 feet high, not winged; *leaves* half clasping at the base; *heads* 2—3 in. across, globose, with a thick white wool and long reflexed spines to the *involucre*.—Waste ground on calcareous soil; local.—Fl. July—September. Biennial.

3. *C. palústris* (Marsh Plume-Thistle). — The tallest of British Thistles, 3—10 feet high, consisting of a single, stout, hollow *stem*, branched towards the summit, and spinously winged throughout by the decurrent *leaves*, which are thickly armed with short, often brownish spines and are usually downy beneath; *heads* small, egg-shaped, in a terminal leafy cluster; *bracts* adpressed, slightly

webbed; *florets* deep crimson, or sometimes white.—Moist places; abundant.—Fl. July—September. Biennial.

4. *C. tuberósus* (Tuberous Plume-Thistle).—*Root* of spindle-shaped, tuberous fibres; *stem* 2 feet high, single, erect, round, hairy, leafless above; *leaves* not decurrent, deeply pinnatifid, fringed with minute prickles; *heads* generally solitary, large, egg-shaped; *florets* crimson.—Grows only in Wiltshire.—Fl. August, September. Perennial.

CNÍCUS PALÚSTRIS (*Marsh Plume-Thistle*).

5. *C. praténsis* (Meadow Plume-Thistle).—A small plant, 12—18 in. high, with fibrous *roots;* a cottony

stem, giving off runners; few *leaves*, mostly radical, soft, wavy, fringed with minute spines, not decurrent; and generally solitary *heads*, with adpressed, slightly cottony *bracts* and crimson *florets*.—Wet meadows; not general.—Fl. June—August. Perennial.

6. *C. heterophýllus* (Melancholy Plume-Thistle).—*Stem* 2—4 feet high, erect, cottony, furrowed, slightly branched above, with runners; *leaves* large, clasping, not decurrent, serrate with minute spines, smooth above, white and downy beneath; *head* large, solitary, egg-shaped, handsome; *bracts* downy; *florets* red-purple.—Moist mountain pastures.—Fl. July—September. Perennial.

7. *C. acaúlis* (Ground Thistle).—A low plant, stemless, or nearly so, and so readily distinguished from all other British species; *radical leaves* pinnatifid, spinous, glabrous; *head* solitary, almost sessile; *florets* crimson.—Dry gravelly or chalky pastures; not general, but abundant in many southern districts.—Fl. July—September. Perennial.

8. *C. arvénsis* (Creeping Plume-Thistle).—A handsome weed, 2—4 feet high, with a creeping *rhizome*; *stem* erect, leafy, angular, not winged; *leaves* sessile, pinnatifid, wavy, very spinous; *heads* numerous, stalked, corymbose; *bracts* broad, adpressed, spinous-pointed; *florets* dingy light purple, musk-scented, diœcious, the staminate ones in sub-globose, and the carpellate ones in egg-shaped heads, the two forms of the plant growing in separate patches.—Fields; very common.—Fl. July—September. Perennial.

Besides these species there are several hybrids between them.

31. ONOPÓRDON (Cotton-Thistle).—Differing from *Carduus* mainly in its honeycombed *receptacle* and 4-angled *fruit*. (Name of Greek origin.)

1. *O. Acánthium* (Scottish Thistle).—A stout,

hoary, or woolly plant, 4—5 feet high ; *stem* erect, branched, with a broad spinous wing to its summit ; *leaves* wavy, pinnatifid, decurrent, woolly on both surfaces ; *heads* many, large, globose, cobwebby ; *bracts* green, recurved, fringed with minute spines ; *florets* pale purple.—Dry waste-places, especially in the south. Cultivated as the national emblem in Scotland.—Fl. July—September. Biennial.

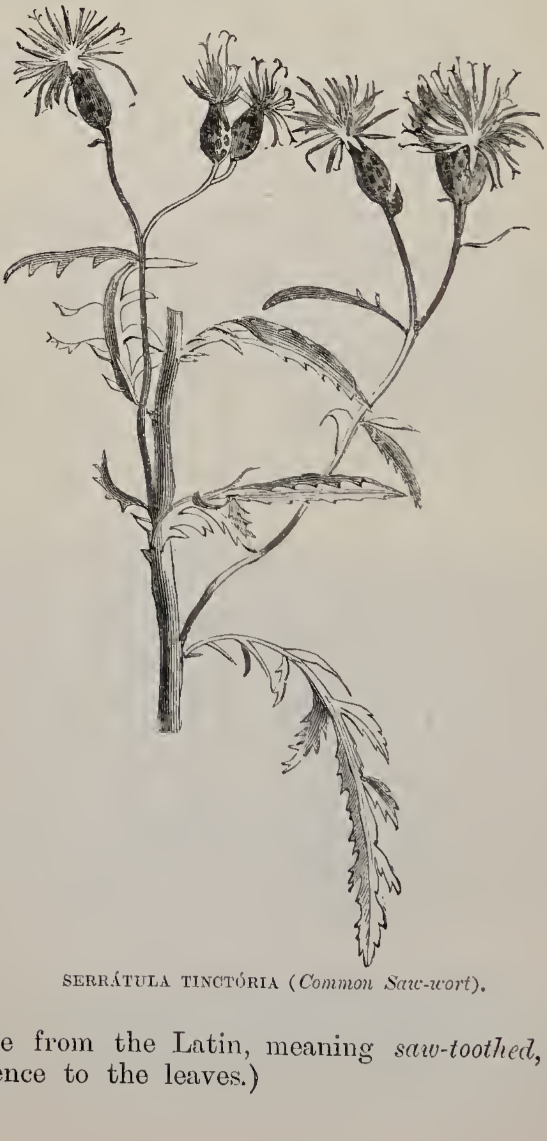
*32. Mariána (Milk-Thistle). — Represented by the species *M. láctea*, is not an indigenous genus. It was called by the early botanists *Cárduus Maríæ*, or " Our Lady's Thistle," and is a stout, glossily glabrous plant, 2—4 feet high, with white veins to its large *leaves ;* large globose *heads* of rose-coloured *florets ;* united *filaments,* and a *pappus* of many rows of silky white hairs.—Waste places.—Fl. June, July. Biennial.

33. Saussúrea.—Herbs, not spinous, with *heads* of bluish-purple, perfect, tubular *florets*, in corymbs ; *bracts* imbricate, in many rows, not spinous ; *receptacle* flat, scaly ; *anthers* tailed ; *pappus* in 2 rows, the outer bristly, the inner longer, feathery. (Named in honour of the two *de Saussures*, Swiss naturalists).

1. *S. alpína* (Alpine Saussurea).—The only British species, 8—12 in. high, downy ; *leaves* oblong-lanceolate, toothed, cottony beneath ; *heads* 2—3 in. across, in a dense terminal corymb ; *involucre* ovoid, woolly ; *florets* light purple, scented like Heliotrope.—Alpine mountains ; rare.—Fl. August. Perennial.

34. Serrátula (Saw-wort).—Herbs with simple, sometimes pinnatifid, serrate *leaves*, and generally diœcious *heads*, with imbricate, not spinous *bracts*, a scaly *receptacle*, *florets* all tubular, crimson or white,

anthers nearly, or quite, without tails, and a *pappus* of several rows of unequal stiff hairs, the inner longest.



SERRÁTULA TINCTÓRIA (*Common Saw-wort*).

(Name from the Latin, meaning *saw-toothed*, with reference to the leaves.)

1. *S. tinctória* (Common Saw-wort).—The only British species, a slender plant, 1—2 feet high, with a stiff, erect, angular *stem*, slightly branched above; *leaves* deeply lyrately pinnatifid and serrate; *heads* few, small, in a loose corymb; *outer bracts* smooth, adpressed; inner tinged with red; *florets* crimson.—Pastures; frequent.—Fl. August. Perennial.

35. CENTAURÉA (Knapweed).—Wiry herbs with *leaves* sometimes spinous; *heads* egg-shaped or globose; *bracts* imbricate, adpressed, membranous, or sometimes spinous, or fringed; *receptacle* flat, bristly; *florets* all tubular, but the outer usually large, unsymmetrical, and neuter. (Name from the Centaur *Chiron*, who is fabled to have healed wounds with some such plant.)

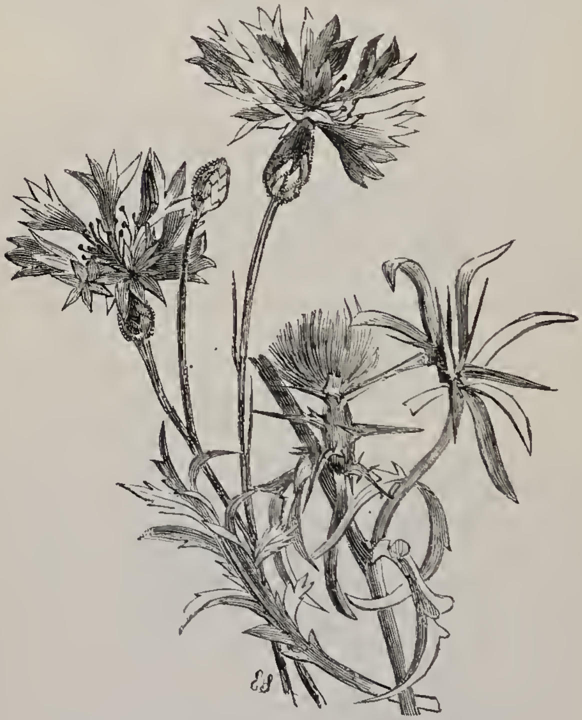
1.* *C. Jácea* (Brown Radiant Knapweed) is a garden escape, with crimson *florets*, the outer ones larger; pinnatifid *outer bracts*, and irregularly jagged *inner* ones.—Fl. August, September. Perennial.

2. *C. nígra* (Black Knapweed Hard-head). — A tough-stemmed plant, 1—2 feet high; *lower leaves* toothed, often with a few small lobes at the base, *upper* narrow, tapering; *heads* terminal, globose, with, or more commonly without, a ray; *bracts* brown or almost black; the outer ones egg-shaped and fringed with spreading bristles; *florets* deep crimson; *pappus* very short, tufted.—Meadows; abundant.—Fl. June—September. Perennial.

3. *C. Scabiósa* (Great Knapweed, Matfellon).—Larger and stouter than the last, from which it is distinguished by its pinnatifid *leaves*, almost always rayed *heads*, *bracts* downy, with a broad brown fringed tip and margins, bright crimson *florets*, and longer *pappus*.—Dry pastures; common.—Fl. July—September. Perennial.

4. *C. Cýanus* (Cornflower, Blue-bottle).—One of the prettiest of flowers, 1—2 feet high; *stem* erect,

slender, grooved, slightly branched, cottony; *leaves* linear-lanceolate, the lower ones toothed; *heads* about an inch across; *involucre* egg-shaped, cobwebby; *bracts* with toothed, membranous margins; *receptacle* with silvery bristles; *ray-florets* few, large, bright blue; *disk-florets* with dark purple anthers.—Cornfields; frequent. When mixed with Poppies and yellow Corn-marigolds, it forms as brilliantly coloured a bouquet as can be imagined. Children sometimes string the outer florets with a needle and thread into a wreath, which, when pressed, will retain its colour



CENTAURÉA CÝANUS *and* C. CALCÍTRAPA (*Corn Blue-bottle and Star-Thistle*).

for a long while. Recently expanded flowers should be chosen, or they will fade.—Rose-coloured, white, and dark purple varieties are common in gardens, and are occasionally found wild.—Fl. July, August; and, in turnip-fields, again in October and November. Annual or Biennial.

5. *C. paniculáta*, with a loosely corymbose *stem*, rather cottony, and cylindric *heads* of pinkish *florets*, and

6. *C. áspera*, a prostrate species, with long, slender *branches*, linear *leaves*, terminal, solitary *heads*, 3—5 spines to each outer *bract*, and purple *florets*, are confined to the Channel Islands.

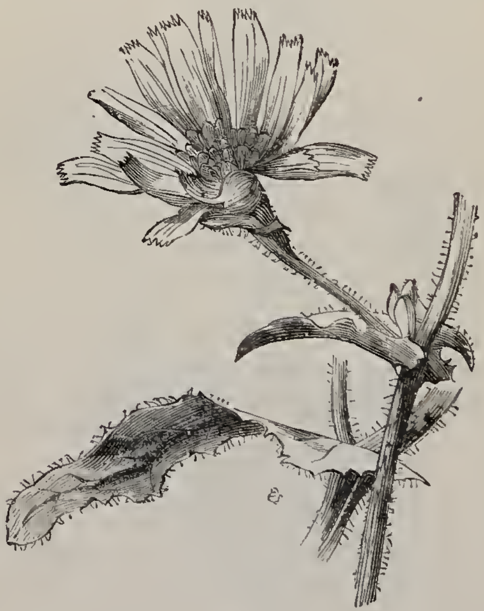
7. *C. Calcítrapa* (Common Star-Thistle).—A stout, spreading, stiff, branched species; *leaves* pinnatifid, bristle-pointed; *heads* lateral, sessile; *bracts* each ending in a long, stiff, spreading, yellow spine, channelled along its upper surface; *florets* rose-purple.—Gravelly and sandy places in the south; rare. The spines resemble the cruel iron instrument called *Caltrops*, which was used to lame cavalry horses in war, the instrument being so constructed that, in whatever position it lies, one point sticks upwards.—Fl. July, August. Annual.

8.* *C. solstitiális* (Yellow Star-Thistle), with *stems* winged by the decurrent bases of the entire hoary *leaves* and terminal *heads*, with very long, needle-like spines and yellow *florets*, occurs as a casual in cultivated land.—Fl. July—September. Annual.

36. Cichórium (Chicory).—Stout herbs with a milky juice; *leaves* simple, radical, and scattered; *heads* axillary; *outer bracts* 5, small, adpressed; *inner* 8, reflexed after flowering; *florets* all ligulate, 5-toothed; *pappus* a double row of small, chaffy scales. (Name of Classical origin).

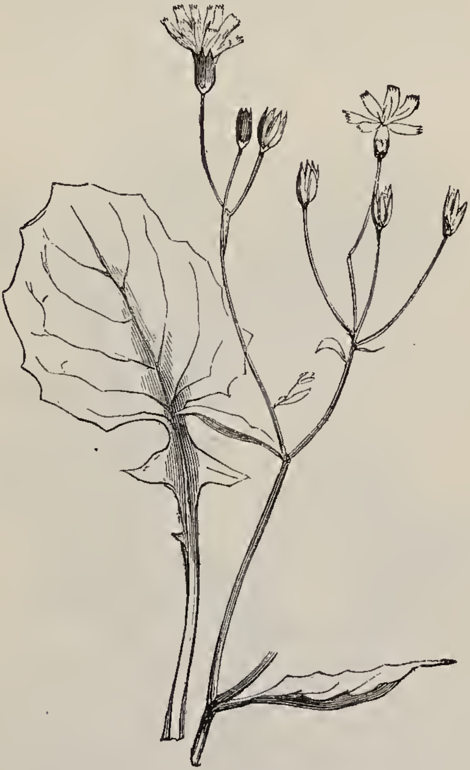
1. *C. Intybus* (Succory, or Wild Chicory).—Well

distinguished by its tough, angled, alternately branching *stems*, clasping leaves, and large *heads* of delicate blue, ligulate *florets*, each of which is distinctly 5-toothed. — Waste places, especially on chalk. Sir James Edward Smith, the founder of the Linnean Society, thus alludes to his early attraction to this beautiful flower :—" From the earliest period of my recollection, when I can just remember tugging ineffectually with all my infant strength at the tough stalks of the Wild Succory, on the chalky hills about Norwich, I have found the study of nature an increasing source of unalloyed pleasure, and a consolation and a refuge under every pain."—Fl. July—October. Perennial.



CICHÓRIUM ÍNTYBUS (*Wild Chicory, or Succory*).

37 Arnóseris (Lamb's Succory).—A small plant with milky juice; radical *leaves* and a few small *heads* of yellow *florets* with an *involucre* of about 12 *bracts*, converging and strongly keeled after flowering. (Name from the Greek *arnos*, a lamb, *seris*, succory.)

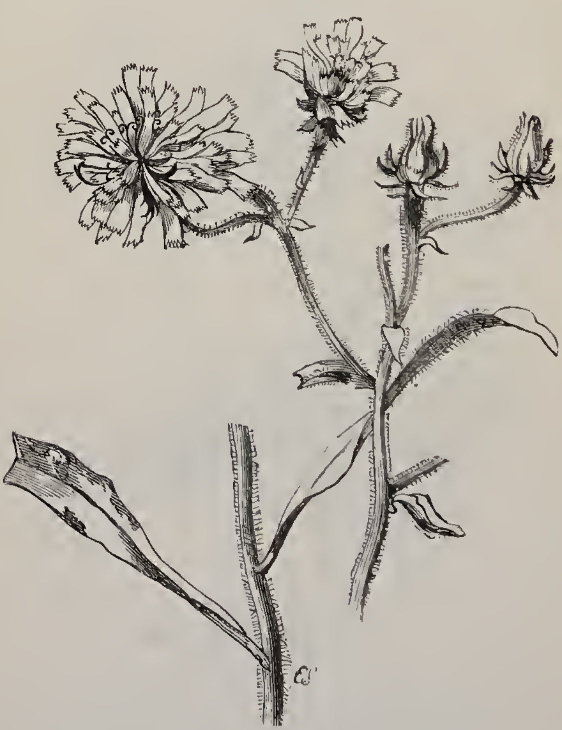


LÁPSANA COMMÚNIS (*Common Nipplewort*).

1. *A. pusílla* (Lamb's or Swine's Succory).—The only species; *stem* branching cymosely, each branch overtopping its predecessor, thickened and hollow upwards, 3—8 in. high; *leaves* radical, obovate,

toothed; *heads* terminating the branches, ½ in. across —Dry places; rare.—Fl. June—August. Annual.

38. Lapsána (Nipplewort). — Slender, erect, branched plants with milky juice; scattered *leaves;* and small heads of 8—12 yellow *florets*, with 1 row of erect *bracts.* (Name, an old Latin name.)

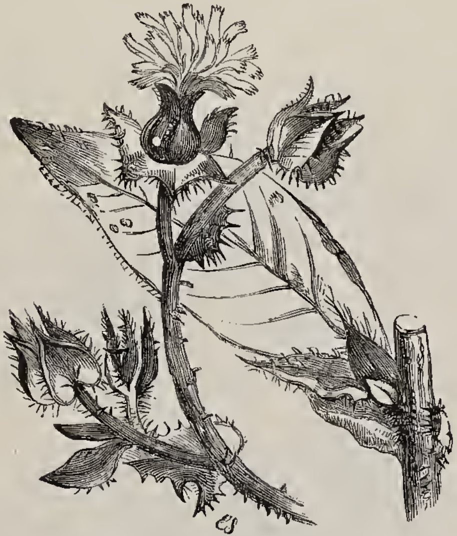


PÍCRIS HIERACIOÍDES (*Hawk-weed Picris*).

1. *L. commúnis* (Common Nipplewort).—The only British species; a branched, leafy plant, 2—3 feet [illegible] lyrately pinnatifid,

stalked; *cauline leaves* small, dentate; *heads* numerous, $\frac{1}{4}$ in. across; *bracts* linear, stiff, keeled.—Waste places and hedgerows; abundant.—Fl. July, August. Annual.

39. Pícris (Ox-tongue).—Hispid, branched plants with a milky juice; *leaves* mostly scattered, simple, toothed; *heads* of yellow ligulate *florets*, with *bracts* in 2 rows; *fruit* brown, curved, transversely wrinkled; *pappus* of 2 or more rows of feathery hairs. (Name from the Greek *picros*, bitter.)



PÍCRIS ECHIOÍDES (*Bristly Ox-tongue*).

1. *P. hieracioïdes* (Hawkweed Picris).—A slender, erect plant, 2—3 feet high, corymbosely branched above; *stems* rough with hooked bristles; *leaves* narrow, rough, and toothed; *heads* numerous, yellow, 1 in. across, with *bracts* on the peduncles.—Waste places; common.—Fl. July—September. Biennial.

2. *P. echioîdes* (Bristly Ox-tongue). — A stout, much-branched plant, 2—3 feet high, well distinguished by its numerous *prickles*, each of which springs from a raised white spot, and by the 5 large ovate-cordate *bracts* below each of the terminal *heads* of yellow flowers.—Waste places; common.—Fl. June —October. Annual.

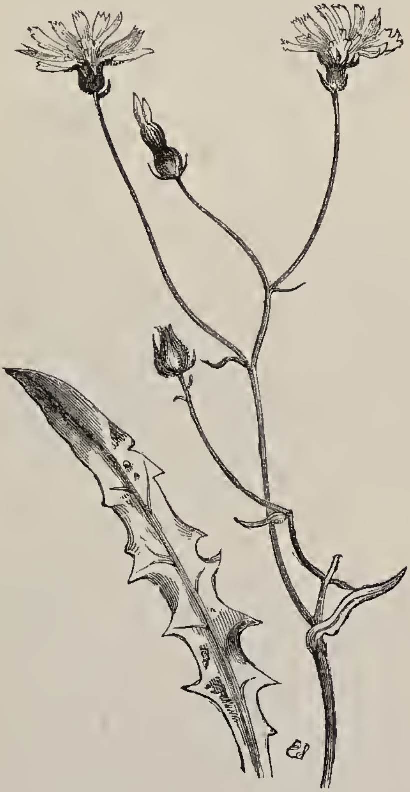
40. CRÉPIS (Hawk's-beard). — Branched plants with a milky juice; *leaves* chiefly radical; *heads* small, in panicles, yellow, or tinged with red; *bracts* many, linear, in 2 rows, the outer shorter; *fruit* tapering or beaked; *pappus* of many rows of simple hairs. (Name said to be the Greek *krepis*, a slipper; but, if so, apparently inappropriate.)

1. *C. fœtida* (Fetid Hawk's-beard).—A hispid plant, about a foot high, branched from below; *leaves* runcinate; *peduncles* long, thickened upwards, bracteate; *heads* corymbose, drooping when in bud, $\frac{3}{4}$ in. across, bright yellow; *fruits* many-ribbed, with long, slender beaks, those in the centre longer.—Chalky places in the south-east; rare.—Fl. June, July. Biennial.

2. *C. taraxacifólia*.—A hispid plant, 1—2 feet high, branched above; *stem* ribbed and furrowed, stained with red; *leaves* runcinate; *peduncles* very slender, not thickened above; *heads* erect when in bud, yellow, the *outer florets* brownish-red beneath; *fruits* slender, all equally long-beaked.—Calcareous soils; local.—Fl. June, July. Biennial.

3.* *C. setósa*.—Occurring as an introduced plant, chiefly in clover-fields, is hispid, 1—3 feet high; *stem* erect, branched from the base, angular, furrowed, and leafy; *upper leaves* large, sagittate; *peduncles* slender, stiff, deeply grooved, not thickened above; *heads* erect when in bud; *fruits* slender, all equally long-beaked.—Fl. July, August. Annual or biennial.

4. *C. vírens* (Smooth Hawk's-beard).—A variable plant, 6 in. to 3 feet in height, glabrous below; *stem* much branched, furrowed; *upper leaves* linear, sagittate; *heads* numerous, sub-corymbose, $\frac{1}{4}$—$\frac{3}{4}$ in. across, yellow; *outer bracts* adpressed, linear, *inner* ones smooth within; *fruit* not beaked; *pappus* silky.—Waste ground and cottage-roofs; common.—Fl. June —September. Annual.



CRÉPIS VÍRENS (*Smooth Hawk's-beard*).

5. *C. biénnis* (Biennial Hawk's-beard).—A stout

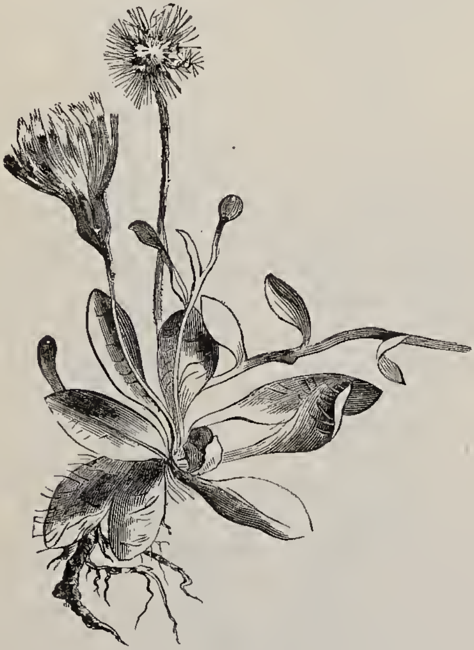
hispid plant, resembling *C. taraxacifólia*, but not red-stained; *stem* 1—4 feet high, channelled; *leaves* large, runcinate, irregularly lobed; *heads* ¾—1 in. across; *outer bracts* spreading, *inner* downy within; *fruit* slender, but not beaked.—Chalky soils in the south; rare.—Fl. June, July. Biennial.

6. *C. succisæfólia* (Blunt-leaved Hawk's-beard).—A slender plant, 2—3 feet high; *leaves* oblong, blunt; *heads* few, yellow; *bracts* with glandular hairs, the *outer* ones short, adpressed; *fruit* many-ribbed, not beaked.—Woods in the north; rare.—Fl. July, August. Perennial.

7. *C. paludósa* (Marsh Hawk's-beard).—A slender, unbranched, mostly glabrous species, about 2 feet high; *stem* angular, leafy; *leaves* large, runcinate, with tapering points, the lower ones stalked; the upper ones heart-shaped at the base, clasping; *peduncles* very slender; *heads* few, corymbose, yellow, erect in bud; *bracts* with black glandular hairs; *fruit* slender, many-ribbed, not beaked; *pappus* of stiff, brittle, brownish hairs.—Damp woods, mostly in the north.—Fl. July—September. Perennial.

41. HIERÁCIUM (Hawkweed).—Perennial plants with milky juice, often hairy; *leaves* chiefly radical; *heads* yellow, or rarely orange; *bracts* many, imbricate, unequal; *receptacle* nearly flat, without scales, pitted; *anthers* not tailed; *fruit* not beaked; *pappus* of 1 row of stiff, brittle, unequal, simple, brownish hairs, often with a crenate disk below. (Name from the Greek *hierax*, a hawk.) The most difficult genus in a difficult Order, and one in which botanists do not at all agree as to what constitutes a species. Bentham recognised about 7 British species, Sir Joseph Hooker 12, and Mr. F. J. Hanbury enumerates 104 as species, arranged under 15 groups. This large number, most of which are rare forms from the Scottish mountains, arises

from the recognition of minute characters which prove constant under cultivation. “Variable as the genus is,” says Sir Joseph Hooker, “it is a curious fact that the sequence of the species is so obvious as to have been recognised by all botanists; and that this sequence represents to a very considerable extent the spread of the species in altitude and area in the British Isles.” The following are among the most common and marked types:—



HIERÁCIUM PILOSÉLLA (*Mouse-ear Hawkweed*).

1. *H. Pilosélla* (Mouse-ear Hawkweed).—A silky plant with long, soft hairs, and slender leafy *runners*; *leaves* mostly radical, oblong or obovate, entire, stel-

lately hoary underneath; *heads* solitary, on scapes 2—10 in. high, bright lemon-yellow or reddish-brown beneath.—Dry banks; common.—Fl. May—August. Perennial.

2.* *H. aurantíacum* (Orange Hawkweed).—A garden escape, larger than the last, often without runners, and readily recognisable by its deep orange *flower-heads* which are collected in a dense corymb and have dark *bracts*.—Fl. June—August. Perennial.

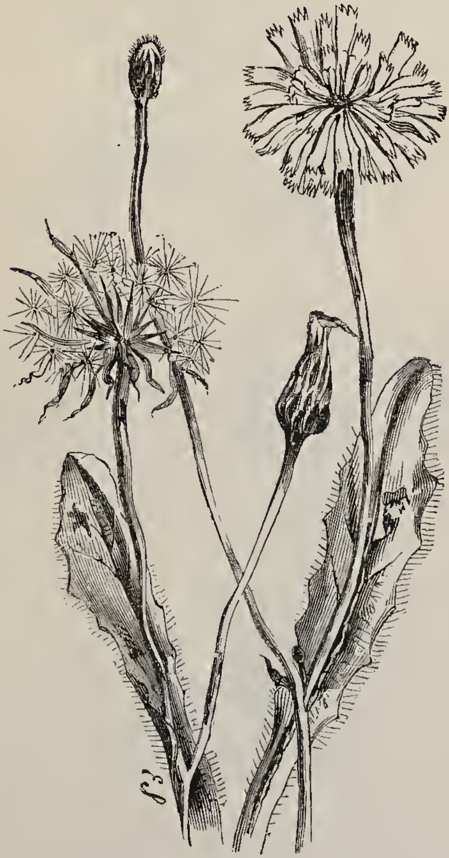
3. *H. murórum* (Wall Hawkweed).—A very variable plant, 1—2 feet high, usually more or less hairy, sometimes glaucous, with a rosette of ovate radical *leaves*, and rarely more than one leaf on the stem, sometimes none; *heads* 2—6 together, each generally less than an inch across, yellow.—Walls, rocks, heaths; common.—Fl. June—September. Perennial.

4. *H. vulgátum* (Common Hawkweed).—Another very variable plant, from 12—18 in. high; *radical leaves* narrow, in a loose rosette, lanceolate, toothed, with the teeth pointing towards the apex, often spotted with red; *cauline leaves* few; *heads* many, panicled or corymbose, about an inch across, yellow; *involucre* hoary with down.—Woods and banks; common.—Fl. July—September. Perennial.

5. *H. boreálé* (Shrubby Hawkweed).—As variable as the preceding species, 2—4 feet high, with stiff, ascending branches; *stem* usually hairy below, with stellate down above, often reddish, leafy; no *radical leaves; cauline leaves* lanceolate, toothed; *heads* many, in a leafy corymb; *peduncles* woolly; *involucre* blackish-green, nearly glabrous.—Woods and banks; common.—Fl. August, September. Perennial.

6. *H. umbellátum* (Narrow-leaved Hawkweed).—A tall, remarkably erect, unbranched plant, 1—4 feet high; *stem* stiff, leafy, hairy below; *leaves* sessile, linear, toothed; *heads* in a terminal, almost umbellate, corymb, large, yellow; *peduncles* with stellate down,

slender, stiff, bracteate; *involucre* usually dark green, glabrous, with recurved tips.—Stony thickets; common.—Fl. July—September. Perennial.

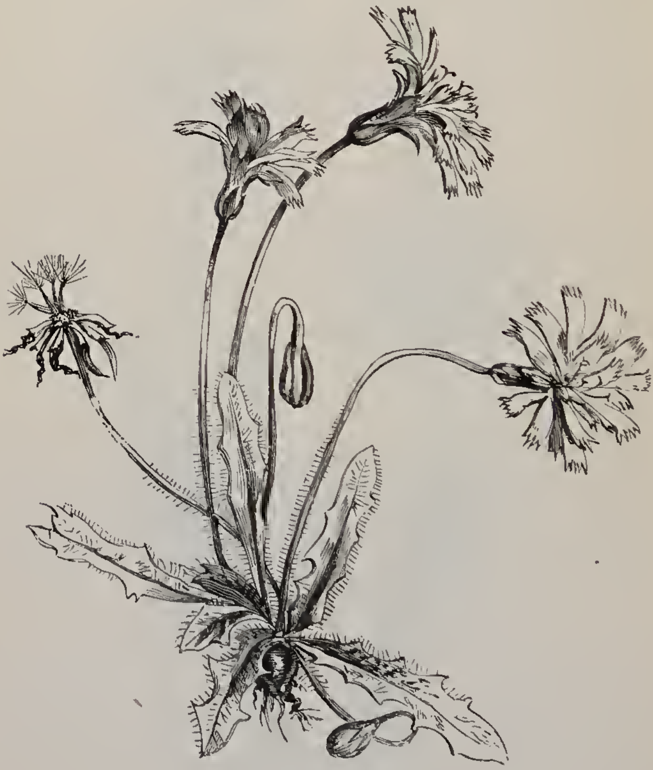


HYPOCHǼRIS RADICÁTA (*Long-rooted Cat's-ear*).

42. Hypochǽris (Cat's-ear).—Plants with a milky juice; *leaves* all radical, pinnatifid; *bracts* many, imbricate, oblong; *receptacle* flat, scaly; *florets* all ligu-

late, yellow; *fruit* rough, beaked; *pappus* of 1 row of feathery hairs, usually with an outer row of short bristles. (Name of Greek origin, supposed to indicate its fitness for hogs.)

1. *H. glábra* (Smooth Cat's-ear).—An almost glabrous plant, 3—10 in. high; *leaves* spreading in a circle on the ground, oblong; *scapes* several, branched; *heads* small, yellow; *involucre* as long as the *florets.*—Dry gravelly places; not common.—Fl. June—August. Annual.



LEÓNTODON HÍRTUS (*Hairy Thrincia*).

2. *H. radicáta* (Long-rooted Cat's-ear).—A hispid plant, about a foot high; *leaves* all radical, blunt, sinuate, or runcinately pinnatifid, bristly; *peduncles* long, branched, smooth, slightly swollen above, and with a few scales; *heads* large, yellow; *involucre* shorter than the florets.—Hedges and waste places; common.—Fl. June—September. Perennial.

3. *H. maculáta* (Spotted Cat's-ear).—A hispid plant, about a foot high; *leaves* obovate, not lobed, toothed, rough, often spotted above; *heads* seldom more than one, large, deep yellow; *bracts* fringed with curly hairs.—Chalky and limestone hills; rare.—Fl. July, August.

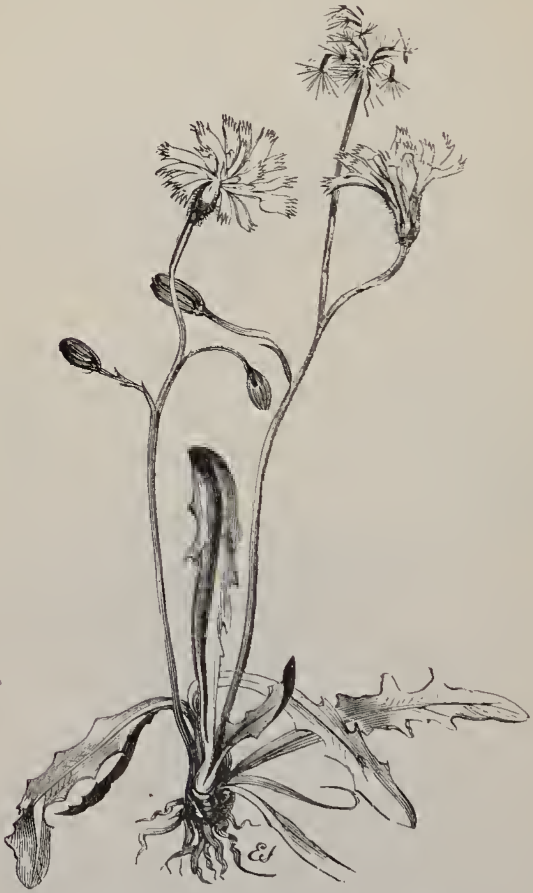
43. Leóntodon (Hawk-bit).—Herbs with milky juice; *leaves* all radical, obovate, toothed or pinnatifid; *heads* on scapes, yellow; *bracts* in 2 or 3 rows, the outer smaller; *receptacle* flat, naked; *fruit* scarcely beaked, *pappus* of 1 or 2 rows of stiff hairs, the inner feathery. (Name from the Greek *leôn*, a lion, *odous, odontos*, a tooth, from the runcinate leaves.)

1. *L. hírtus* (Hairy Hawk-bit or Thrincia).—A small plant, 4—6 in. high; *leaves* spreading, more or less lobed, rough, with forked or simple bristles; *peduncles* leafless, unbranched, somewhat hairy, often purplish; *heads* less than an inch across, yellow, drooping when in bud.—Dry places; common.—Fl. June—September. Biennial.

2. *L. híspidus* (Rough Hawk-bit).—A similarly hispid plant, often with forked hairs; *leaves* oblong-lanceolate, runcinate; *peduncles* fewer, longer, more swollen above than in the preceding, green; *heads* 1½ in. across, drooping when in bud, yellow.—Meadows and waste places; common.—Fl. June—September Biennial.

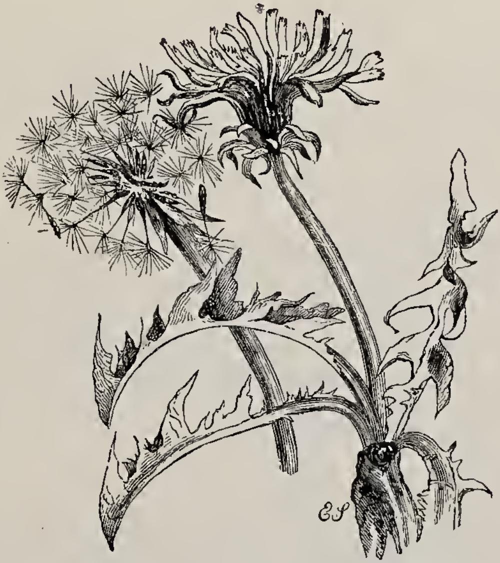
3. *L. autumnális* (Autumn Hawk-bit.)—A tall plant, 2—3 feet high; *leaves* narrow, toothed or pin-

natifid, only hairy on the ribs beneath; *scape* branched, bracteate, swollen above; *heads* large, erect when in bud, deep-yellow; *pappus* of a single row of brownish feathery hairs.—Meadows and cornfields; abundant. —Fl. July—September. Perennial.



LEÓNTODON AUTUMNÁLIS (*Autumnal Hawk-bit*).

44. TARÁXACUM (Dandelion).—Herbs with a milky juice; *leaves* all radical, runcinate; *peduncles* hollow, leafless, unbranched; *heads* solitary, yellow; *bracts* in 2 rows, the inner erect, the outer often recurved; *receptacle* flat, naked, pitted, becoming more convex in the fruit stage; *fruit* ribbed, with a long, slender beak; *pappus* of white, silky, simple hairs in many rows.



TARÁXACUM OFFICINÁLÉ (*Common Dandelion*).

(Name from the Greek, referring to its medicinal character.)

1. *T. officinálé* (Common Dandelion).—A nearly glabrous plant, with a long black *tap-root*, well distinguished by the above characters, especially the runcinate *leaves*, smooth, hollow *peduncle*, and reflexed *outer bracts*. The *heads*, when in fruit, become globular, and are known to children, who amuse themselves by blowing off the separate fruits, as What's o'clocks, or

Clocks. Dandelion, from the French *Dent-de-lion*, lion's tooth, is the name applied by the unobservant to many other yellow-flowered members of the Order. —Meadows; abundant. The dandelion is a valuable medicine, and is also eaten as a salad.—Fl. March—October. Perennial.

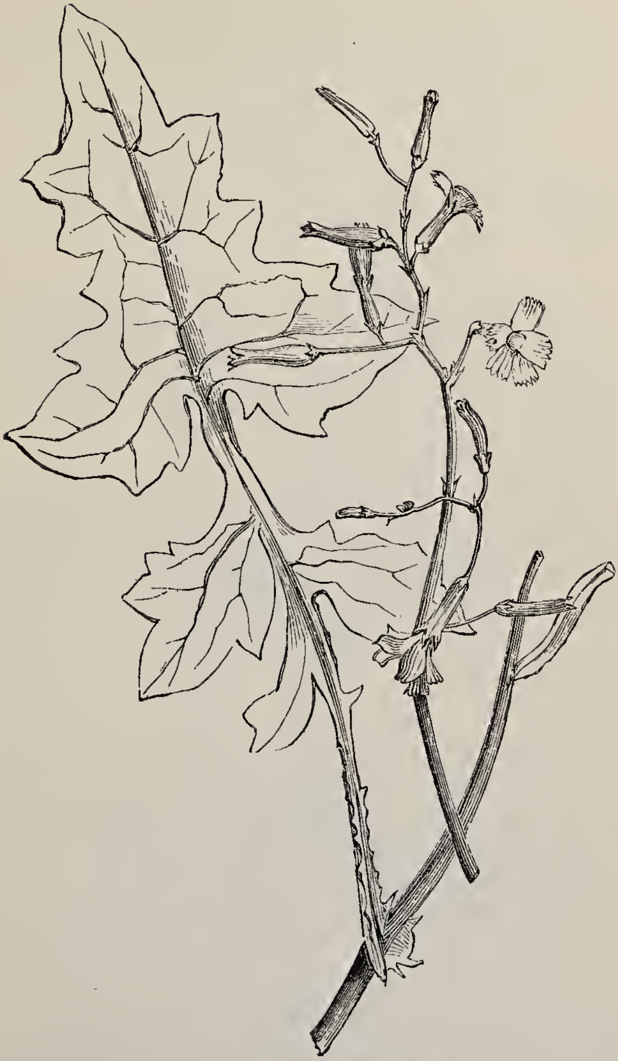
45. Lactúca (Lettuce).—Erect, leafy herbs, with a milky juice; *leaves* scattered, the upper ones often auricled; *heads* generally small, in a panicle, yellow, or rarely purple; *bracts* imbricate, the outer shorter; *receptacle* flat, naked; *florets* usually few; *fruit* flattened, generally with a long, slender beak; *pappus* of many simple hairs. (Name of Classical origin, referring to the milky juice.)

1. *L. virósa* (Acrid Lettuce).—An acrid, glaucous, prickly plant, 2—4 feet high; *leaves* spreading horizontally, with bristles along the mid-rib beneath, the lower ones often spotted with black, the upper ones clasping, with downward-pointing auricles; *heads* small, pale yellow, in a loose, slender, spreading panicle; *fruit* black.—Dry banks; not uncommon.—Fl. July, August. Biennial.

2. *L. Scaríola* (Prickly Lettuce).—A closely allied species, less prickly, with more erect *branches* and *leaves*, the upper leaves sagittate and clasping, grey *fruit* and a less acrid juice.—Waste places; rare. This may be the origin of the Garden Lettuce (*L. satíva*).—Fl. July, August. Biennial.

3. *L. salígna.*—A slender, less bristly, almost glabrous plant, with *upper leaves* linear, entire, acuminate, hastate at the base, and *heads* in lateral tufted clusters.—Chalky places in the south-east, especially near the sea; rare.—Fl. July, August. Biennial.

4. *L. murális* (Ivy-leaved Lettuce).—A slender, glabrous plant, 1—2 feet high, leafy below; *stem* round, hollow; *leaves* lyrately pinnatifid, variously



LACTÚCA MURÀLIS (*Ivy-leaved Lettuce*).

cut, glaucous beneath, auricled; *heads* small, yellow, in a slender, angular, spreading panicle, each containing 5 *florets*, and so resembling a flower with 5 petals; *fruit* black.—Old walls and woods; not uncommon.—Fl. June—September. Biennial.

5. *L. alpína* (Blue Sow-thistle).—A very handsome plant, about 3 feet high, succulent, unbranched, and leafy, with pale blue *heads*, 1 in. across, in a raceme, grows on the Clova mountains, but is rare.

*46. Prenánthes is represented by the one species *P. purpúrea*, an erect, unbranched plant with oblong-lanceolate *leaves*, amplexicaul, slightly toothed, and glaucous beneath, and drooping *heads* of purple *florets* on *peduncles*, which is naturalised in some Scottish localities. Perennial.

47. Sónchus (Sow-thistle).—Herbs with milky juice, generally succulent; *leaves* scattered, toothed or pinnatifid; *heads* yellow, in corymbs; *bracts* imbricate in several rows; *receptacle* flat, naked, pitted; *fruit* much flattened, not beaked; *pappus* of many rows of white, simple, silky hairs. (Name of Greek origin, said to refer to its juice being wholesome; but this is doubtful.)

1. *S. oleráceus* (Common Sow-thistle, Milk-thistle).—Usually glabrous, 2—3 feet high, erect, branched; *stem* hollow; *leaves* more or less pinnatifid, toothed, often prickly, the upper ones clasping, with spreading sagittate *auricles*; *fruit* ribbed and transversely wrinkled.—Waste places, and as a weed in gardens; common. This plant is a favourite food for rabbits.—Fl. June—August. Annual.

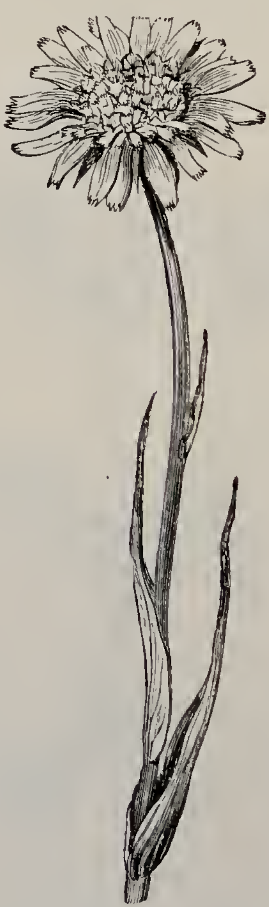
2. *S. ásper* (Rough Sow-thistle) has more spinously-toothed *leaves* with rounded *auricles*, and ribbed, but not transversely wrinkled, *fruit*.—It occurs under the same circumstances as the preceding, and is almost as common.—Fl. June—August. Annual.

3. *S. arvĕnsis* (Corn Sow-thistle).—*Stem* 2—4 feet high, tubular, angular, usually unbranched below; *leaves* variable, waved, almost spinous, glaucous beneath, the lower ones runcinate, heart-shaped at the base, the upper ones with rounded *auricles; heads* corymbose, large; *involucre* and *peduncles* hairy with glandular hairs.—In similar situations with the last, from which it may be distinguished by its much

SÓNCHUS OLERÁCEUS (*Common Sow-thistle, Milk-thistle*).

larger flower-heads and generally unbranched stem.—Fl. August, September. Perennial.

4. *S. palústris* (Marsh Sow-thistle).—A much taller plant than either of the preceding, growing 4—7 feet high, unbranched; *leaves* narrow, arrow-shaped at the base, finely toothed; *heads* corymbose,



TRAGOPÓGON PRATÉNSÉ (*Yellow Goat's-beard*).

large, lemon-yellow; *involucre* and *peduncles* hairy with glandular hairs.—Marshes in the south-east; very rare.

48. TRAGOPÓGON (Goat's-beard).—Erect, glabrous, generally unbranched herbs with a milky juice; *leaves* scattered, entire, sheathing; *heads* solitary, yellow or purple; *bracts* 8—10, long, narrow, in one row, united below; *receptacle* naked; *fruit* with longitudinal ridges and a long, slender beak; *pappus* of many rows of feathery hairs. (Name from the Greek *tragos*, a goat, *pogon*, a beard.)

1. *T. praténsé* (Goat's-beard, Jack-go-to-bed-at-noon).—An erect, glaucous plant, about 2 feet high, with very long, tapering, channelled, grass-like *leaves; flower-stalks* slightly thickened above; *involucre* about as long as, or longer than the florets; *heads* solitary, large, yellow, closing at noon; *pappus* feathery, on a long stalk, interlaced so as to form a kind of shallow cup.—Meadows and waste places; common.—Fl. June, July. Biennial.

2.* *T. porrifólium* (Salsify), resembling the last, but with purple *heads*, though not a British species, is occasionally found in moist meadows. It was formerly much cultivated for the sake of its fleshy tap-root, which was boiled or stewed, forming a very delicate esculent; but its place is now supplied by *Scorzonéra hispánica.*

§§ *Stamens* on the ovary (epigynous).

ORD. XLII. CAMPANULÁCEÆ.—THE BELL-FLOWER FAMILY.

A considerable Order of herbaceous or slightly shrubby plants, with a bitter, acrid, milky juice, which chiefly inhabit the temperate regions of the Northern Hemisphere. They have mostly scattered, exstipulate *leaves* and conspicuous blue, white, or rarely red, *flowers*, which, except in the genus *Lobélia*, are polysymmetric. The *sepals*, *petals*, and *stamens* are 5 each, the *calyx* being gamosepalous, superior, and persistent, the *corolla* epigynously calycifloral, polysymmetric, except in *Lobélia*, and withering on the fruit, and the *stamens* alternating with the lobes of the corolla, and in *Jasíoné* and *Lobélia* united by their *anthers*. There are 2—5 *carpels* united in a 1, 2, or more-chambered inferior *ovarý*, with a single hairy *style*, simple or lobed *stigma*, and numerous *ovules* in each chamber, the *placentation* being axile. The *fruit* is a dry capsule, crowned by the withered calyx and corolla, and splitting, or opening by valves, at the side or top. Many species of the Order are highly ornamental; but few are valuable either as food or medicine. The roots of *Campánula Rapúnculus* were formerly cultivated for the table, under the name of Rampions or Ramps. *Lobélia* is more acrid than the other genera, the rare British species *L. úrens*, deriving its name from the blistering properties of its juice. The North American species, *L. infláta* (Indian Tobacco) is useful in small doses in asthma, but in large doses is a powerful emetic and narcotic poison. *L. cardinális* (Scarlet Cardinal), one of our most brilliantly-coloured garden flowers, is also very acrid. Some species of this genus contain a good deal of caoutchouc.

1. LOBÉLIA.—*Corolla* bi-labiate, the upper lip split to the base of the tube; *anthers* cohering in a tube.

2. JASÍONÉ.—*Flowers* in heads; *corolla* rotate with linear lobes; *anthers* united at the base.

3. WAHLENBÉRGIA.—*Corolla* polysymmetric, campanulate, 5-fid; *anthers* free; *capsule* half-superior, 3-chambered, opening by valves at the top.

4. PHYTEÚMA.—*Corolla* polysymmetric, 2-lipped,

with 5 long linear segments; *anthers* free; *capsule* 2—3-chambered, bursting at the sides.

5. Campánula.—*Corolla* polysymmetric, campanulate, 5-fid; *anthers* free; *capsule* 3—5-chambered, opening by lateral pores below the sepals.

LOBÉLIA DORTMÁNNA (*Water Lobelia*).

6. Speculária.—*Corolla* polysymmetric, rotate;

anthers free; *capsule* long, 3—5-chambered, opening by lateral pores between the sepals.

1. Lobélia.—Herbs with their *flowers* in terminal racemes; *calyx* superior, 5-fid; *corolla* bi-labiate, the upper lip split to the base into 2 erect or recurved lobes, the lower with 3 pendulous lobes; *stamens* 5, epipetalous, with united anthers; *capsule* 2—3-chambered, 2—3-valved. (Name from Matthias de Lobel, a Flemish botanist of the sixteenth century, who lived for many years at Highgate.)

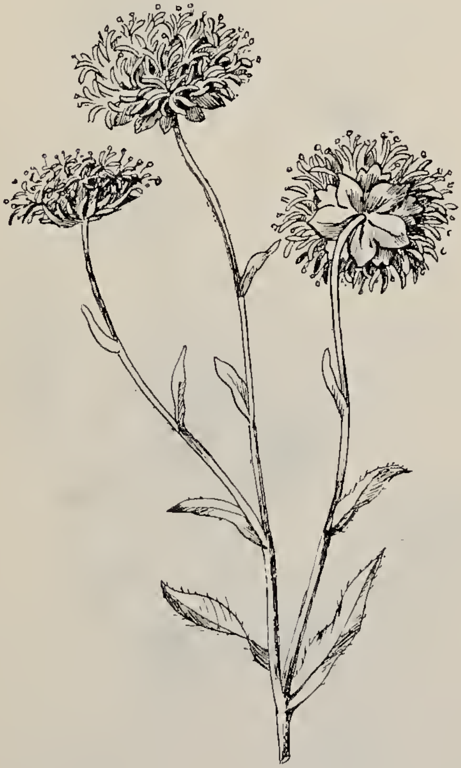
1. *L. Dortmánna* (Water Lobelia).—A submerged aquatic plant, forming a matted base at the bottom of the water; *leaves* all radical, almost cylindrical, of 2 parallel tubes; *scape* slender, erect, cylindric, almost leafless, hollow, rising above the water; *flowers* distant, drooping, pale lilac, bracteate.—Mountain lakes with gravelly bottoms.—Fl. July, August. Perennial.

2. *L. úrens* (Acrid Lobelia).—*Stem* angular, leafy, with an acrid, milky juice; *leaves* obovate, toothed; *flowers* purple, erect or spreading, with long bracts.—A heath near Axminster, Devon; very rare.—Fl. August, September. Perennial.

2. Jasíoné (Sheep's-bit).—Herbs with both radical and cauline *leaves*; *flowers* small, in terminal heads, with an *involucre* of many bracts; *calyx* 5-fid; *corolla* rotate, deeply divided into 5 linear lobes; *stamens* 5, united by their anthers; *capsule* 2-chambered, 2-valved. (Name of uncertain origin.)

1. *J. montána* (Sheep's-bit, Sheep's Scabious).—The only British species, about a foot high, and strongly resembling a Scabious or one of the *Compósitæ*, but differing from the former in its united anthers, and from the latter in its 2-chambered

capsule. The *leaves* are oblong, blunt and hairy; the *heads* of flowers lilac-blue.—Dry heathy places; common. The whole plant, when bruised, has a strong and disagreeable smell.—Fl. June –September. Perennial.

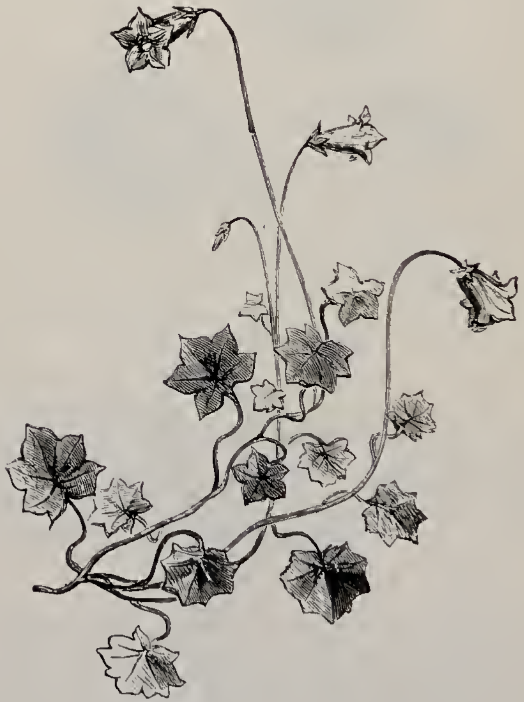


JASÍONÉ MONTÁNA (*Sheep's Scabious*).

3. WAHLENBÉRGIA (Ivy-leaved Bell-flower). — A slender herbaceous plant, closely resembling the genus

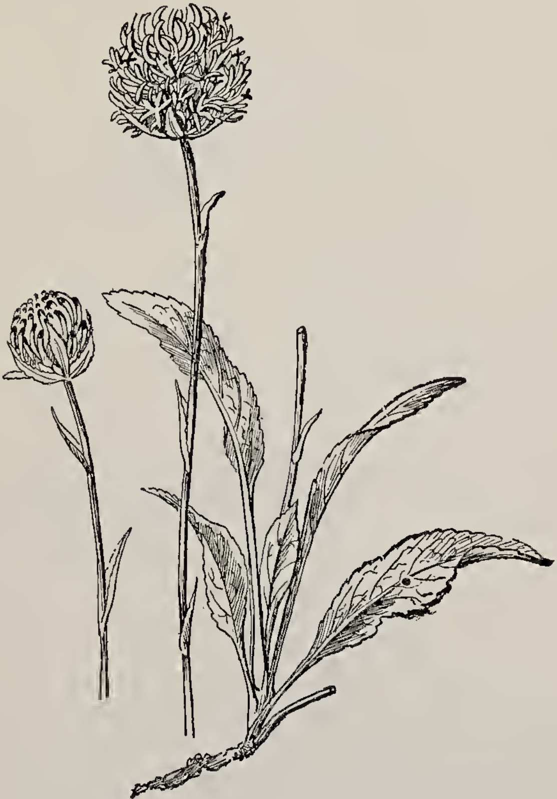
Campánula, with a campanulate, 5-fid *corolla* and 5 free *anthers*; but with a half-superior *ovary* which splits when in fruit by valves above the sepals. (Named in honour of Dr. George Wahlenberg, a Swedish botanist.)

1. *W. hederácea* (Ivy-leaved Bell-flower).—An exquisite little plant with straggling, thread-like *stems*, 4—6 in. high, or when among grass or rushes climbing by their help to a height of 12 in. or more; leaves stalked, palmately 5-lobed, of a remarkably fine texture and delicate green; *flowers* solitary, on long stalks scarcely thicker than a hair, slightly drooping,



WAHLENBÉRGIA HEDERÁCEA (*Icy-leaved Bell-flower*).

pale blue.—Wet peaty places in the south, often growing with the Bog Pimpernel and the Cornish Moneywort, plants scarcely less beautiful than itself. —Fl. July—September. Perennial.



PHYTEÚMA ORBICULÁRÉ (*Round-headed Rampion*).

4. Phyteúma (Rampion).—Herbs with both radical and cauline *leaves* and *flowers* in dense spikes or heads, with an *involucre* of several bracts; *calyx*

superior, 5-fid; *corolla* polysymmetric, rotate, deeply divided into 5 long linear segments; *filaments* broad at the base; *anthers* free; *capsule* 2—3-chambered, bursting at the sides. (Name apparently connected with the Greek *phuton*, a plant.)

1. *P. orbiculáré* (Round-headed Rampion).—A singular plant, consisting of a solitary, erect, leafy stalk, about a foot high, with stalked, ovate, crenate *radical leaves* and few sessile, linear, *cauline* ones; *flowers* deep blue in a globose terminal head, which becomes oblong when in fruit.—Chalky downs in the south-east; local.—Fl. July, August. Perennial.

2. *P. spicátum* (Spiked Rampion). — A taller species with oblong *heads* of cream-coloured *flowers*, formerly cultivated for the sake of its edible root, is found only in Sussex.—Fl. May—July. Perennial.

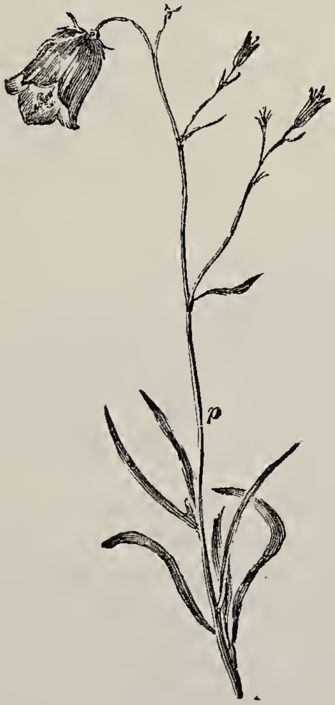
5. CAMPÁNULA (Bell-flower).—Herbs with usually stalked *radical leaves; cauline leaves* scattered; *calyx* superior, 5-fid; *corolla* bell-shaped, with 5 broad and shallow lobes; *filaments* broad at the base; *anthers* free; *capsule* not elongated, 2—5-chambered, opening by lateral pores below the sepals. (Name, a diminutive from the Latin *campana*, a bell.)

1. *C. glomeráta* (Clustered Bell-flower).—A stiff, erect plant, 3—18 in. high; *stem* simple, roughish, leafy; *leaves* crenate, rough, the lower stalked and heart-shaped at the base, the upper sessile, embracing the stem; *flowers* nearly sessile, deep violet-purple, funnel-shaped, erect, in terminal and axillary clusters, each $\frac{3}{4}$ in. across.—Dry pastures, especially on a chalky soil; frequent.—Fl. July—October. Perennial.

2. *C. Trachélium* (Nettle-leaved Bell-flower, Wild Canterbury Bells).—A remarkably rough plant, 2—3 feet high, with angular *stem; leaves* very like those of the nettle, strongly serrated and bristly, stalked, ovate-lanceolate, acute; *flowers* in axillary clusters of

2—3, on short stalks which are recurved when in fruit, large, $\frac{3}{4}$ in. or more across, blue-purple, lighter than *C. glomeráta*, bell-shaped.—Woods and hedges; frequent.—Fl. July—October. Perennial.

3. *C. latifólia* (Giant Bell-flower).—A stout species, 3—4 feet high, with furrowed *stem; leaves* ovate-lanceolate, acuminate, doubly-serrate, hairy, lower ones stalked; *flowers* very large, stalked, bell-shaped, deep blue or white, hairy within.—Woody glens in Scotland; common; less common in England.—Fl. July, August. Perennial.



CAMPÁNULA ROTUNDIFÓLÍA (*Hare-bell*).

4. *C. rapunculoïdes* (Creeping Bell-flower).—A

downy plant, 1—2 feet high, with runners; *leaves* unequally crenate-serrate; *flowers* in a long raceme with small *bracts*, large, bright blue, drooping, all on one side of the stem.—Hedges; very rare.—Fl. July, August. Perennial.

5. *C. rotundifólía* (Harebell).—A glabrous plant, with a slender, angular *stem; radical leaves*, roundish, kidney-shaped, notched, stalked, very soon withering; *cauline leaves* very narrow, tapering; *flowers* in a raceme, drooping, about an inch across, light blue, or rarely white.—Heaths and dry places; abundant. This species is the Bluebell of Scotland; but the name Harebell is sometimes incorrectly applied to the Wild Hyacinth, the Bluebell of England (*Scilla festális*). The specific name *rotundifólía* (round-leaved) seems inappropriate when we only look at the cauline leaves, which are long and narrow; but is peculiarly applicable to the radical ones, as they appear in winter or early spring, at which season Linnæus is reported to have noticed them on the steps of the University at Upsala.—Fl. July—September. Perennial.

6.* *C. persicifólía*, a glabrous species, 1—2 feet high, with round *stem*, with runners; smooth, leathery, slightly serrate, narrow *leaves;* large, often solitary, blue or white *flowers* with entire lanceolate *sepals*, occasionally occurs as a naturalised plant in woods.—Fl. July, August. Perennial.

7. *C. Rapúnculus* (Rampion).—A tall species, 2—3 feet high, with angular *stem* and clustered *panicles* of rather small, erect, pale blue *flowers* with awl-shaped recurved *sepals*.—Gravelly and sandy places in the south; local.—Fl. July, August. Biennial.

8. *C. pátula* (Spreading Bell-flower), distinguished by its rough *stem*, loose *panicles* of wide, cup-shaped, purplish-blue *flowers* and awl-shaped *sepals* toothed at the base.—Hedges and copses, chiefly in the west; local.—Fl. July, August. Biennial.

6. SPECULÁRIA (Venus' Looking-glass).— Small herbs with purple or white *flowers ; corolla* polysymmetric, rotate; *anthers* free; *capsule* long, 3—5-chambered, opening by lateral pores above the middle or between the sepals. (Name from the Latin *speculum*, a mirror, from its bright flowers.)

1. *S. hýbrida* (Wild Venus' Looking-glass).—A small plant, 4—12 in. high, with a rough, wiry, angular, seldom-branched *stem ;* oblong, rough, wavy *leaves ;* small, terminal *flowers* with a *calyx* much longer than the purple rotate *corolla;* and an elongated, generally triangular *capsule* tapering at both ends.—Cornfields, chiefly in the south.—Fl. June—September. Annual.

ORD. XLIII. VACCINIÁCEÆ.—THE CRANBERRY FAMILY.

Small shrubby plants, inhabiting temperate regions, especially mountainous and marshy districts. *Leaves* scattered, simple, often evergreen; *calyx* superior, of 4—6 lobes, which are sometimes so small as to be scarcely perceptible; *corolla* 4—6-lobed, urceolate, bell-shaped or rotate; *stamens* 8—12, free, epigynous; *anthers* opening by 2 terminal pores, and often furnished with 2 bristle-like appendages which act as levers in the process of insect-pollination; *ovary* 4—10-chambered, surmounted by a flat disk; *style* simple; *fruit* a true berry, juicy; *seeds* small, many in each chamber of the ovary. By some botanists these plants are placed in the same Order as the Heaths, from which they differ chiefly in having an inferior ovary. The leaves and bark are astringent, the berries slightly acid and agreeable to the taste. Cranberries, the fruit of *Schóllera Oecycóccus* and *S. macrocárpus*, are largely imported, the former from Russia, the latter from Chicago, for making tarts. Several members of the Order are cultivated for their pretty flowers.

1. VACCÍNIUM.—*Corolla* campanulate or urceolate, 4—5-fid.

2. SCHÓLLERA.—*Corolla* rotate, with 4 linear, reflexed segments.

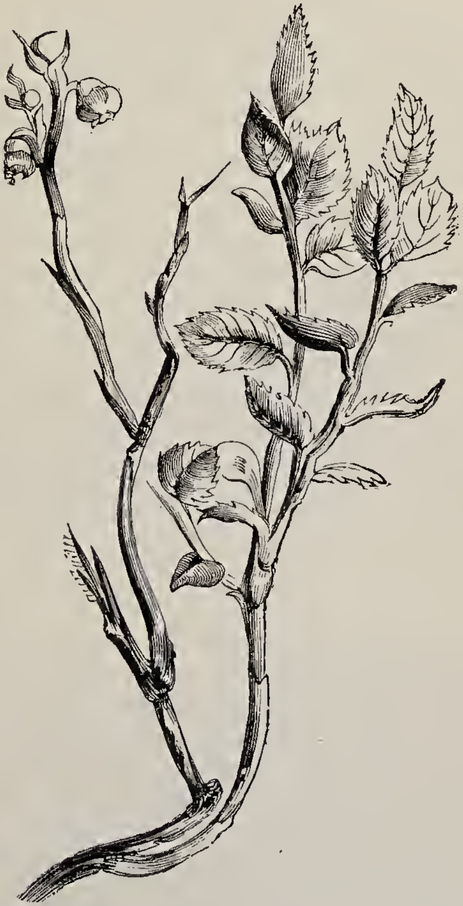
1. VACCÍNIUM (Whortleberry).—Low shrubs with scattered, often evergreen, *leaves* ; *calyx* superior, 4—5-lobed, sometimes with the lobes so short as to be scarcely perceptible ; *corolla* campanulate or urceolate, 4—5-fid ; *stamens* 8—10 ; *anther-chambers* prolonged upwards into tubes ending in pores ; *berry* globose, 4—5-chambered, many-seeded. (Name of doubtful etymology.)

1. *V. Vítis-Idæ̃a* (Cowberry, Red Whortleberry). —A low, straggling shrub with evergreen inversely egg-shaped *leaves*, resembling those of the Box, dotted beneath, the margins rolled back ; *flowers* pink, in terminal crowded drooping clusters ; *corolla* 4-cleft ; *anthers* without bristles ; *berries* red.—Mountainous heaths, chiefly in the north.—Fl. June, July. Perennial.

2. *V. uliginósum* (Bog Whortleberry, or Great Bilberry).—*Stem* woody, rounded ; *leaves* not evergreen, inversely egg-shaped, entire, glaucous, and strongly veined beneath ; *flowers* small, pale pink ; *anthers* with two bristles at the back ; *berry* small, dark blue, glaucous.—Mountainous bogs in the north. —Fl. May, June. Perennial.

3. *V. Myrtíllus* (Whortleberry, Bilberry, Whinberry).—A small branched shrub, 6—18 in. high ; *stem* acutely angular ; *leaves* not evergreen, egg-shaped, serrate ; *flowers* solitary, drooping, nearly globular, flesh-coloured, wax-like, larger than in the last ; *anthers* with two bristles ; *berry* dark blue, glaucous, larger than in the last.—Woods ; abundant. The

berries, which are popularly known as *whorts*, have an agreeable taste, and are often made into tarts; but



VACCÍNIUM MYRTÍLLUS (*Whortleberry, Bilberry, Whinberry*).

when thus used are rather mawkish unless mixed with some more acid fruit. — Fl. April — June. Perennial.

2. SCHÓLLERA (Cranberry.)—Slender, woody undershrubs, with small, scattered, evergreen *leaves ;* terminal, drooping *flowers ; calyx* 4-lobed ; *corolla* rotate, with 4 linear, reflexed segments ; *stamens* 8 ; *anthers* without bristles, the chambers prolonged into tubes ; *berry* globose, 4-chambered, many-seeded. (Name in honour of Frederic Adam Scholler, a Saxon botanist.)

1. *S. Occycóccus* (Cranberry, Marsh Whortleberry).—A very low plant, with very slender, straggling, wiry, prostrate *stems*, rooting at intervals ; *leaves* evergreen, egg-shaped, revolute, glaucous beneath ; *flowers* solitary, terminal ; *corolla* bright red, rotate, with 4 long, linear, reflexed segments ; *berries* dark red.—Peat-bogs, principally in the north.—Fl. June—August. Perennial.

SERIES II. HYPÓGYNÆ.—ORD. XLIV.—LXI.

Ovary superior.

§ *Stamens* free.

ORD. XLIV. ERICÁCEÆ.—THE HEATH FAMILY.

A large Order, mostly of shrubs and small bushy trees with evergreen, often rigid, mostly opposite or whorled, simple *leaves.* Many of them are remarkable for their "social" nature, large tracts of country being often entirely covered with a few species, and known from this as "heaths." They are most abundant in South Africa, and are, therefore, often called "Cape plants" by gardeners ; whilst other genera are so distinctively North American as to give rise to the name "American garden," for borders in which they are grown. They are common also in South America, in Europe, and in the mountainous parts of

Asia, chiefly outside the Tropics. Their *flowers* are mostly polysymmetric; the *calyx* inferior, 4—5-cleft, persistent; *corolla* hypogynous, usually urceolate or campanulate, 4—5-cleft, often withering and remaining attached to the plant; *stamens* equal in number to the segments of the corolla, or twice as many, inserted with the corolla, or slightly attached to its base; *anthers* opening by pores, and generally furnished with two bristle-like appendages; *ovary* superior, many-chambered, many-ovuled, with a hypogynous disk; *style* single, straight; *fruit* 3—5-chambered, dry or succulent, many-seeded. The extensive genus *Eríca* (Heath) contains no species possessing useful properties; but briar-root pipes are made from *E. arbórea*, the name briar being a corruption of the French *bruyère*. The Common Ling, or Heather (*Callúna Eríca*), is astringent, and is sometimes used in dyeing; its tough branches are a common material for brooms; its flowers are a favourite resort of bees; and its buds, shoots, and seeds enter largely into the food of moor-fowl. Of the plants belonging to the Order which produce juicy, berry-like fruits, the fruit is, in some instances, edible. *Árbutus Únedo* bears an abundance of handsome fruits, which, when thoroughly ripe, are not unpalatable, and which, from their outward resemblance to strawberries, give the plant its English name, Strawberry-tree. Some species, especially of *Kálmia* and *Azálea*, possess dangerous narcotic properties. The Canadian partridge is stated to be poisonous to human beings after feeding on Kalmia berries, and the honey which poisoned Xenophon's Greeks during the famous retreat of the Ten Thousand was probably that of *Azálea póntica*, which still grows on the shores of the Black Sea and is known to possess this property.

1. Árbutus.—*Leaves* broad; *corolla* globose, deciduous; *stamens* 10; *fruit* fleshy, tubercled, 5-chambered, many-seeded.

2. Arctostáphylos.—*Fruit* fleshy, smooth, 5-chambered, 5-seeded; otherwise like *Árbutus.*

3. Andrómeda.—*Fruit* a dry, 5-chambered, 5-valved capsule; otherwise like *Árbutus.*

4. Callúna.—*Leaves* small; *sepals* 4, coloured, longer than the corolla; *corolla* bell-shaped, 4-cleft, persistent; *stamens* 8; *capsule* 4-chambered, septicidal; *seeds* few in each chamber.

5. Eríca.—*Leaves* small; *sepals* 4; *corolla* bell-shaped, tubular, or urceolate, 4-cleft, persistent; *stamens* 8; *capsule* 4-chambered, loculicidal; *seeds* many in each chamber.

6. Loiseleúria.—*Leaves* small; *sepals*, *petals*, and *stamens* 5 each; *corolla* bell-shaped, deciduous; *capsule* 2—3-chambered, septicidal.

7. Bryánthus.—*Sepals* 5; *corolla* urceolate, 5-fid, deciduous; *stamens* 10; *capsule* 5-chambered, septicidal.

8. Borétta.—*Sepals* 4; *corolla* urceolate, 4-fid, deciduous; *stamens* 8; *capsule* 4-chambered, septicidal.

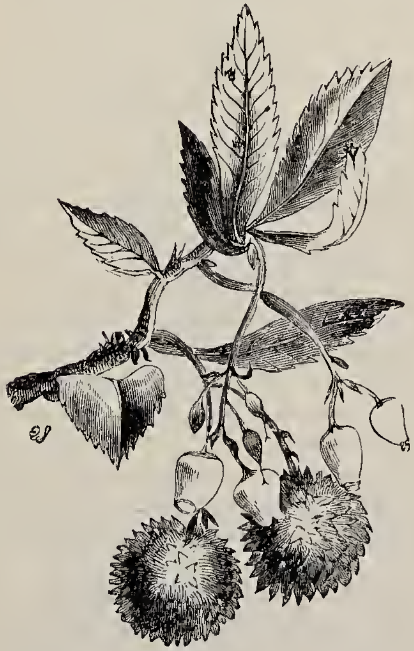
9. Pýrola.—Herbs; *leaves* chiefly radical, broad; *sepals* 5; *petals* 5, free, incurved; *stamens* 10; *capsule* 5 chambered, loculicidal.

10. Monéses.—*Petals* united; *anthers* prolonged into tubes; otherwise mainly like *Pýrola.*

1. Árbutus (Strawberry-tree).—Trees or shrubs with scattered, broad, usually evergreen *leaves*; *flowers* in terminal panicles, 5-merous; *corolla* globose, deciduous; *stamens* 10; *fruit* fleshy, tubercled, 5-chambered, many-seeded. (Name, the Classical Latin name of the plant.)

1. *A. Únedo* (Strawberry-tree).—A beautiful evergreen tree with a rough, reddish *bark;* large, elliptical, tapering, smooth, serrate, deep-green *leaves;* numerous terminal clusters of drooping creamy-white

flowers; and nearly globular, scarlet, berry-like *fruits*, rough with minute hard grains.—About the lakes of Killarney, abundant and truly wild; common in English gardens, and naturalised about Clifton. The flowers are in full perfection when the fruit of the preceding year is ripening; and then the tree presents its most attractive appearance. The fruit is so much less agreeable to the taste than to the eye as to have originated Pliny's name *Unedo*, "One-I-eat," as if no one would wish to try a second; but birds are very fond of it.—Fl. September, October. Perennial.


ÁRBUTUS ÚNEDO (*Strawberry-tree*).

2. ARCTOSTÁPHYLOS (Bear-berry).—Prostrate under-

shrubs with smaller *leaves*; but only differing essentially from *Árbutus* in having a smooth *fruit* with only one *seed* in each of its 5 chambers. (Name from the Greek *arctos*, a bear, *staphulé*, a grape.)

1. *A. alpína* (Black Bear-berry).—A small, prostrate shrub; *leaves* obovate, serrate, thin, wrinkled, shortly stalked, not evergreen; *flowers* white; *fruit* fleshy, smooth, black.—Dry barren spots on Highland mountains; rare.—Fl. May—July. Perennial.

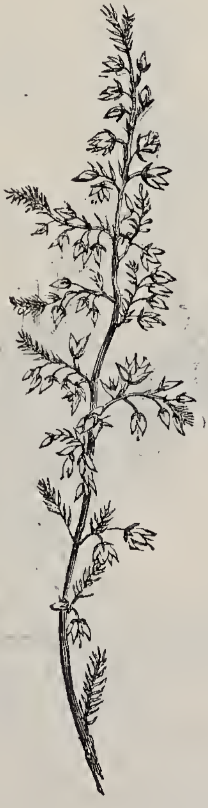
2. *A. Uva-úrsi* (Red Bear-berry).—Resembling the preceding in its mode of growth, but the *leaves* are entire, leathery, and evergreen, turning red in autumn; *flowers* rose-coloured; and *fruits* scarlet.—Mountainous heaths in the north; abundant. The leaves are used in medicine as an astringent, and the fruit is a favourite food of moor-fowl.—Fl. May, June. Perennial.

3. Andrómeda.—Shrubs and trees, differing from *Árbutus* mainly in their dry, 5-chambered, 5-valved *capsule*. ("Named in allusion to the fable of *Andrómeda*, who was chained to a rock, and exposed to the attack of a sea-monster; so does this beautiful tribe of plants grow in dreary and northern wastes, feigned to be the abode of preternatural monsters."—*Sir W. J. Hooker.*)

1. *A. polifólia* (Marsh Andromeda).—The only British species, a small, leafy, evergreen shrub with slender, prostrate *stems*, scattered lanceolate *leaves*, revolute and glaucous beneath, and terminal clusters of stalked, drooping, pink flowers.—Peat-bogs, chiefly in the north.—Fl. May—September. Perennial.

4. Callúna (Ling, Heather).—A much-branched under-shrub with small, opposite, imbricate *leaves*; numerous, stalked, bracteate, small *flowers*; *calyx* of

4 coloured sepals, longer than the corolla; *corolla* bell-shaped, 4-cleft, persistent, lilac; *stamens* 8; *capsule* 4-chambered, septicidal; *seeds* few in each chamber.

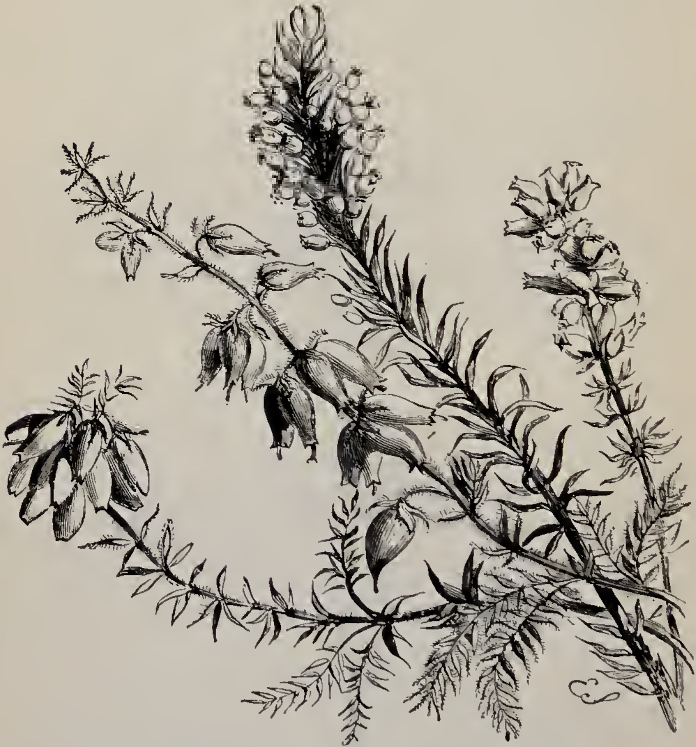


CALLÚNA ERÍCA (*Ling, or Heather*).

(Name from the Greek *kallúno*, I cleanse, from the use of the twigs to make brooms.)

1. *C. Eríca* (Ling, or Heather).—The only species. The small *leaves* are more or less downy (sometimes even hoary), and, being arranged in opposite and

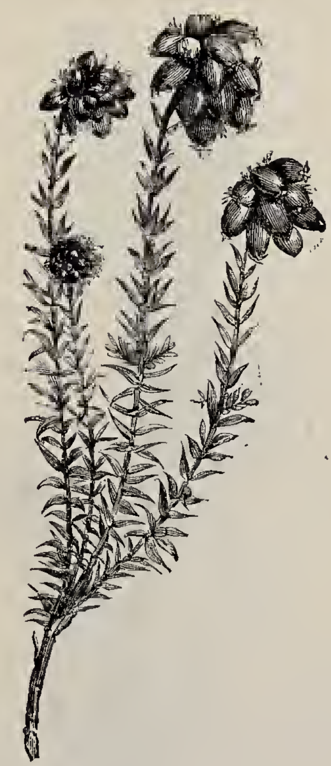
decussating pairs, give the stem a 4-sided appearance. There are 4 small green *bracts* below each flower, and 4 rose-coloured *sepals* concealing the very small, bell-shaped, 4-cleft *corolla*.—Heaths and moors; abundant. The flowers persist long after the fruit is ripe, often, indeed, until the next year's flowering. A beautiful double-flowered variety has been found in Cornwall.—Fl. June—August. Perennial.



ERÍCA TÉTRALIX, E. CILIÁRIS, E. VÁGANS, *and* E. CINÉREA.

5. **Eríca** (Heath).—Wiry, much-branched under-shrubs with small, narrow, stiff, generally whorled

leaves; bracteate *flowers*; *sepals* 4; *corolla* bell-shaped, tubular or urceolate; *stamens* 8; *capsule* 4-chambered, 4-valved, loculicidal, and septifragal. (Name from the Greek *ereice*.)



ERÍCA TÉTRALIX (*Cross-leaved Heath*).

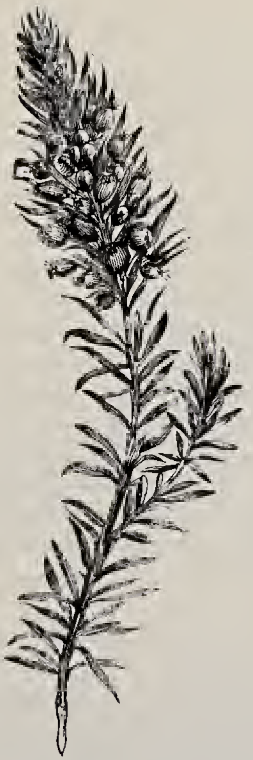
1. *E. ciliáris* (Ciliated Heath).—By far the most beautiful of all the British species; *leaves* 3 or 4 in a whorl, downy above, glaucous beneath; *flowers* in terminal, interrupted, one-sided, spike-like racemes, ovoid, half-an-inch long, crimson, enclosing the

stamens.—Sandy heaths, Cornwall; near Corfe Castle, Dorset; and Galway.—Fl. June—September. Perennial.

2. *E. Tétralix* (Cross-leaved Heath).—Well distinguished from all other English species by its narrow, fringed *leaves* being placed cross-wise, and by its terminal, one-sided *heads* of drooping, rose-coloured *flowers*. The part of the flower nearest the stem is of

ERÍCA CINÉREA (*Fine-leaved Heath*).

a lighter colour than that which is exposed, where it deepens to a delicate blush, the whole flower appearing as if modelled in wax. It is sometimes found of a pure white.—Heaths; abundant.—Fl. July—September. Perennial.



ERÍCA VÁGANS (*Cornish Heath*).

3. *E. Mackáii* (Mackay's Heath), differing in being more bushy, more glabrous, with broader *leaves*, and more numerous *heads* of smaller *flowers*, occurs only in Connemara.

4. *E. cinérea* (Fine-leaved Heath).—The commonest

British species, a bushy plant, with tough, wiry *stems*, very narrow, smooth *leaves*, 3 in a whorl; and ovoid, deep rose, or sometimes white, *flowers* in irregular, whorled, leafy clusters, not confined to one side of the stem.—Heaths; abundant.—Fl. July—September. Perennial.

5. *E. vágans* (Cornish Heath).—*Stems* much branched, 2—4 feet high, very leafy in the upper parts; *leaves* 3—5 in a whorl, crowded, very narrow, smooth; *flowers* light red, rose-coloured, or pure white, bell-shaped, in a leafy, regular, tapering cluster; *stamens* forming a ring outside the corolla until they have shed their pollen, when they droop to the sides, dark red in the red varieties; light red in the white.—Covering many thousands of acres on the Goonhilley Downs, and on other heaths on the serpentine of the Lizard in Cornwall, almost to the exclusion of *E. cinérea* and *E. Tétralix*.—Fl. July—September. Perennial.

6. *E. mediterránea* (Mediterranean Heath), with *leaves* 4 in a whorl, a coloured *calyx*, pink *corolla*, and less prominent *anthers*, well known as a garden plant, occurs also in Connemara.—Fl. April, May. Perennial.

6. Loiseléuria.—A small, trailing shrub with small, opposite *leaves; sepals, petals*, and *stamens* 5 each; *corolla* bell-shaped, deciduous; *capsule* 2—3-chambered, septicidal. (Name from *M. Loiseleur Deslongchamps*, a French botanist.)

1. *L. procúmbens* (Trailing Azalea).—The original and only Azalea of Linnæus, very different in habit from most of the plants cultivated under the name of *Azaleas*. The *stems* are prostrate and tangled; the *leaves* small, smooth, rigid, and evergreen, with the margins remarkably rolled back; the *flowers* flesh-pink, in terminal tufts, with red *peduncles* and

sepals.—Highland mountains.—Fl. May, June. Perennial.

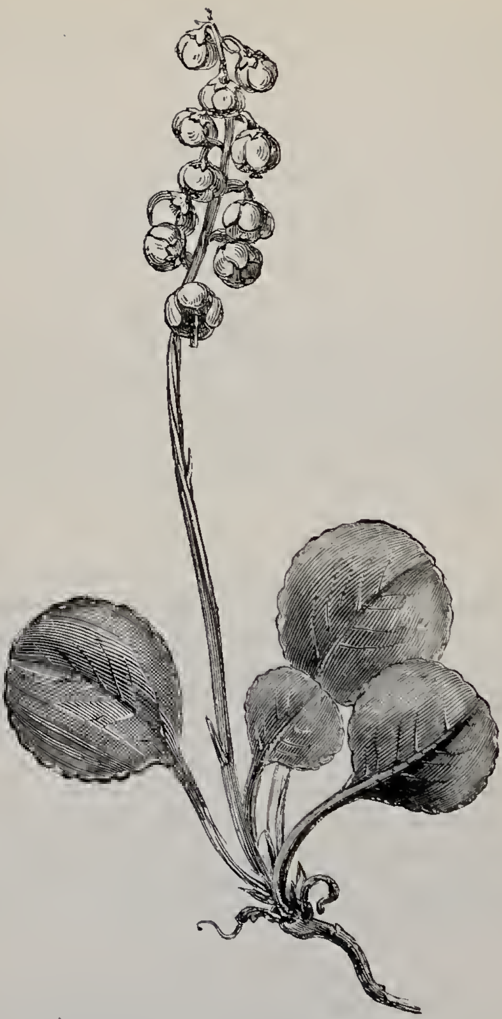
7. Bryánthus (Menziesia). — Small, evergreen shrubs with scattered *leaves* and few drooping, umbellate *flowers*; *sepals* 5; *corolla* urceolate, 5-fid, deciduous; *stamens* 10; *capsule* 5-chambered, septicidal. (Name from the Greek *bruon*, a moss, *anthos*, a flower.)

1. *B. taxifólius* (Scotch Menziesia).—A small shrub, naked below, very leafy and hairy above; *leaves* crowded, shortly stalked, linear, minutely toothed, revolute; *flower-stalks* covered with glandular hairs; *flowers* in terminal tufts, lilac.—Sow of Athol, Perthshire; very rare.—Fl. June, July. Perennial.

8. Borétta (St. Dabeoc's Heath).—A small, evergreen shrub with scattered *leaves* and drooping *flowers* in terminal, 1-sided, loose, leafy racemes; *sepals* 4; *corolla* urceolate, 4-fid, deciduous; *stamens* 8; *capsule* 4-chambered, septicidal. (Name of unknown etymology.)

1. *B. cantábrica* (St. Dabeoc's Heath, Irish Menziesia).—The only species, a small shrub with ovate, revolute *leaves*, bright green and glossy above, white and downy beneath; and large, crimson, or sometimes white, *flowers*.—Mountainous heaths in Connemara; rare.—Fl. August. Perennial.

9. Pýrola (Winter-green).—Herbaceous plants with slender, creeping *rhizomes*; short, almost woody, unbranched *stems*; simple, smooth, evergreen, broad, chiefly radical *leaves*; *flowers* in a bracteate raceme, drooping to one side; *sepals* 5, persistent; *petals* 5, free, incurved; *stamens* 10; *capsule* 5-chambered,



PÝROLA MÉDIA (*Intermediate Winter-green*).

loculicidal. (Name, a diminutive from *Pyrus*, a pear, from a fancied resemblance in their leaves.)

1. *P. rotundifólia* (Round-leaved Winter-green).

—*Leaves* entire or slightly crenate, on long, slender stalks; *flowers* numerous, pure white in a long raceme; *style* longer than the petals, bent down, and, at the extremity, curved upwards.—Moist woods; rare.—Fl. July—September. Perennial.

2. *P. média* (Intermediate Winter-green).—*Flowers* less expanded than in the preceding, milk-white, tinged with pink; *style* erect, nearly straight, longer than the stamens, projecting beyond the corolla.—Woods; local.—Fl. July, August. Perennial.

3. *P. mínor* (Lesser Winter-green).—*Flower* numerous, very shortly stalked, globose, nearly closed, pale pink; *stamens* as long as the short *style; stigma* large, included within the flower.—Woods and heaths; more common in the north.—Fl. June—August. Perennial.

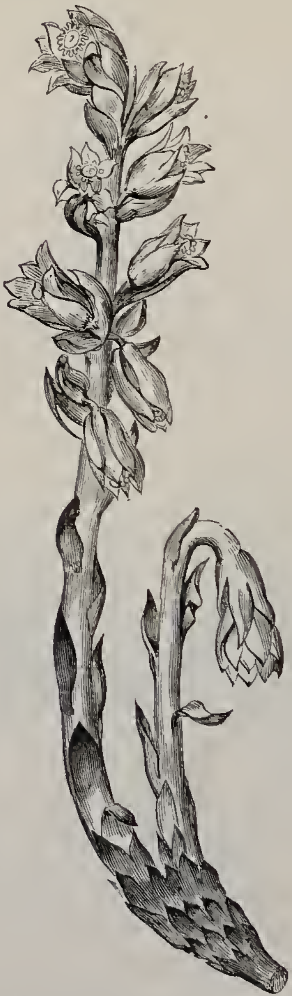
4. *P. secúnda* (One-sided Winter-green).—*Flowers* greenish-white, all hanging to one side, nearly closed; *stamens* as long as the long, straight *style*, or nearly so; *stigma* exserted.—Rocky woods in the north; rare.—Fl. July. Perennial.

10. MONÉSES (Single-flowered Winter-green).—Differing from *Pýrola* in having a solitary *flower* with slightly united, spreading *petals*, and *anthers* prolonged into tubes. (Name from the Greek *monos*, alone, from its solitary flowers.)

1. *M. grandiflóra* (Single-flowered Winter-green).—A remarkably pretty plant, with several roundish, smooth, serrate, radical *leaves*, and a single, large, elegant, white, highly fragrant, long-stalked *flower*.—Woods in the north of Scotland; rare.—Fl. July. Perennial.

ORD. XLV. MONOTRÓPEÆ.—THE BIRD'S-NEST FAMILY.

A small group of brown saprophytic herbs, with little or no chlorophyll, living in and upon dead leaves in woods in the North Temperate Zone They



HYPÓPITYS MONÓTROPA (*Pine Bird's-nest, Fir-rape*).

have fleshy, scaly *rhizomes;* unbranched *stems;* scattered *leaves* reduced to scales; *flowers* generally in racemes, campanulate, 4—6-merous; *stamens* 8—10, hypogynous; *anthers* kidney-shaped, 1-chambered; *ovary* 4—5-chambered, superior; *style* single; *stigma* flat; *ovules* many in each chamber, axile; *capsule* 5-valved, loculicidal; *seeds* minute, with a loose testa.

1. Hypópitys (Bird's-nest).—Terminal *flower* 5-merous; lateral ones 4-merous; *sepals* and *petals* membranous, saccate at the base; *stamens* 10 in the terminal, 8 in the lateral flowers; *stigma* not lobed. (Name from the Greek *hupo*, under, *pitus*, a pine-tree, from the situation in which the plant occurs.)

1. *H. Monótropa* (Fir-rape, Pine Bird's-nest.)—The only British species, with an unbranched juicy *stem*, clothed throughout with scaly *bracts*, and terminating in a drooping, one-sided raceme of brownish-yellow *flowers*, which eventually turn almost black.—Woods near the roots of Fir and Beech; local. This plant must not be confounded with the Bird's-nest Orchis (*Neóttia Nídus-ávis*) or with the Broom-rapes (*Orobánché*), in both of which the flowers are monosymmetric, the former 3-merous, the latter bilabiate and didynamous.—Fl. June—August. Perennial.

§§ *Stamens* epipetalous.

Ord. XLVI. Plumbagíneæ.—The Thrift Family.

A small group of herbaceous or somewhat shrubby plants, with undivided fleshy *leaves*; polysymmetric, perfect *flowers* in panicles or heads; *calyx* inferior, tubular, 5-cleft, plaited, persistent, membranous, and often coloured, approaching the texture of Everlasting-flowers; *corolla* 5-cleft nearly to the base; *stamens* 5, opposite the petals; *ovary* of 5 carpels, 1-chambered; *styles* 5; *fruit* dry, 1-seeded. They inhabit salt marshes and the sea-shore of most temperate regions, and some are found also in mountainous districts. Their properties are various: some are astringent and tonic, some intensely acrid, and many contain iodine; but, like many other maritime plants, they lose the peculiar salts which they contain in their natural localities when growing at a distance from the sea. Thrift (*Arméria*), for example, as a maritime plant contains iodine and soda; but as a mountain or garden plant exchanges these two substances for potash. The root of *Státicé Caroliniána* is one of the most powerful astringents known, and several species of *Plumbágo* are so acrid that the fresh root is used to raise blisters. Several kinds of Sea-Lavender (*Státicé*) are ornaments to our shores, and others are cultivated in our conservatories.

1. STÁTICÉ.—*Flowers* in one-sided panicled cymes.
2. ARMÉRIA.—*Flowers* in dense bracteate heads.

1. STÁTICÉ (Sea-Lavender).—*Leaves* all radical; *flowers* in spike-like, one-sided, spreading, branched cymes; *style* smooth. (Name from the Greek *statizo*, I stop, from its use as an astringent.)

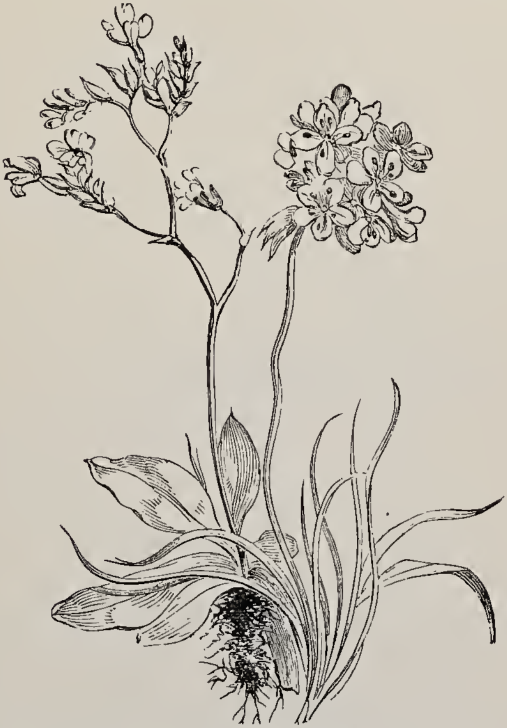
1. *S. Límónium* (Common Sea-Lavender).—*Leaves* long-stalked, oblong, 1-ribbed, pinnately veined, tipped with a point, smooth; *flower-stalk*, a leafless, angular scape, branched near the summit into many spreading spike-like clusters; *flowers* blue-lilac, scentless.—Muddy sea-coasts; not infrequent.—Fl. July—November. Perennial.

2. *S. rariflóra* (Few-flowered Sea-Lavender), differing mainly in having more erect *branches* and fewer *flowers*, is less common.

3. *S. auriculæfólia* (Spathulate Sea-Lavender), distinguished by its *leaves* being oblong near the base and wider above (*spathulate*), with short stalks and 2—3-veined, and by its *flower-stalks* being branched, below the middle, into several erect tufts of lilac

flowers, is not uncommon on rocky coasts.—Fl. July, August. Perennial.

4. *S. reticuláta* (Matted Sea-Lavender).—*Leaves* blunt, 1-ribbed, short-stalked; *flower-stalks* rough, divided almost from the base into numerous zigzag branches, the lower of which are flowerless.—Salt marshes of Lincoln, Norfolk, and Cambridge.—Fl. July, August. Perennial.



STÁTICÉ SPATHULATA (*Spathulate Sea-Lavender*) and ARMÉRIA MARÍTIMA (*Thrift*).

2. Arméria (Thrift).—*Leaves* all radical, very

narrow; *flowers* in dense heads of bracteate cymes, with a reversed, tubular, membranous *involucre; petals* cohering, persistent; *styles* hairy. (Name said to be from the French *armoires*, wardrobes, perhaps from the custom of putting some plant among linen as a perfume.)

1. *A. marítima* (Thrift, Sea-Pink).—*Leaves* linear, 1-nerved, fleshy, pubescent, forming dense tufts or balls; *flower-stalks* leafless, downy, unbranched scapes, 3—6 in. high, their summits cased in brown membranous sheaths; *flowers* rose-coloured, in roundish heads, intermixed with chaffy *bracts; fruit* almost winged by the dry, chaffy calyx.—Sea-shores and the tops of mountains; common.—Fl. April—October. Perennial.

2. *A. plantagínea*, a larger, smooth species, with broader, 3—5-veined *leaves*, occurs in Jersey.—Fl. June—August. Perennial.

ORD. XLVII. PRIMULÁCEÆ.—THE PRIMROSE FAMILY.

Herbaceous plants, mostly low-growing, inhabiting principally the colder regions of the Northern Hemisphere, and in lower latitudes ascending to the confines of perpetual snow. The *leaves* are exstipulate and mostly simple; the *flowers* polysymmetric and perfect. The *calyx* is inferior, except in the Brookweed (*Sámolus*), persistent and 5-cleft, or rarely 4-cleft, or in the Chickweed Winter-green (*Trientális*) 7-cleft; the *corolla* of as many lobes as the calyx, but in the Sea-Milkwort (*Glaux*) absent. The *stamens* equal in number the lobes of the corolla, and are opposite to them: the syncarpous *ovary* is 1-chambered with a free central *placenta* and numerous *ovules*, a single *style*, and a rounded, unlobed or, as it is called, "capitate" stigma. Several of our most favourite wild flowers are members of this Order. The Primrose, the name of which is corrupted from *primerolles*, *primerula*, or *primula*, meaning the earliest little flower, is the welcome harbinger of spring; the Cowslip is scarcely less prized for its rural associations than for its beauty and fragrance; and the Scarlet Pimpernel, or "Poor Man's Weather-glass," is as trusty a herald of summer weather as the Primrose of spring. The Polyanthus, Auricula, and other species of *Prímula* are garden favourites, and several species of *Cýclamen* are commonly grown in conservatories. The *Primuláceæ* have few medicinal properties of importance: the flowers of the Cowslip are made into a pleasant soporific wine; and the leaves of the Auricula (*Prímula Aurícula*) are used in the Alps as a remedy for coughs.

1. HOTTÓNIA.—*Calyx* inferior, 5-cleft almost to the base; *corolla* salver-shaped, with a short tube; *capsule* with 5 valves cohering at the top.

2. PRÍMULA.—*Leaves* radical; *flowers* in umbels; *calyx* inferior, tubular, 5-cleft; *corolla* salver- or funnel-shaped, with a long, cylindrical tube; *capsule* 5-valved, with 10 teeth.

*3. CÝCLAMEN.—*Stem* a large corm; *leaves* radical; *flowers* solitary; *calyx* inferior, bell-shaped, 5-cleft; *corolla* with a short, bell-shaped tube and reflexed, long, 5-cleft limb; *capsule* opening with five teeth.

4. LYSIMÁCHIA.—*Leaves* cauline; *calyx* inferior, 5-cleft to the base; *corolla* yellow, rotate or cup-shaped; *capsule* indehiscent or 2—5-valved.

5. TRIENTÁLIS.—*Leaves* cauline; *calyx* inferior, 7-partite, or rarely 5—9; *corolla* white, rotate, without a tube; *capsule* opening with 5 revolute valves.

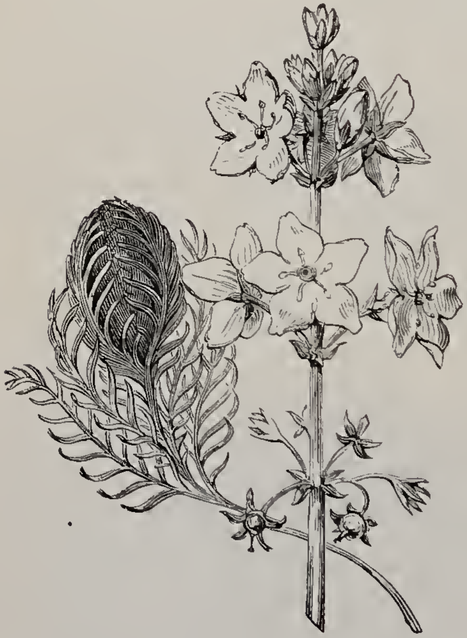
6. GLAÚX.—*Leaves* cauline; *calyx* inferior, bell-shaped, 5-lobed, coloured; *corolla* absent; *capsule* 5-valved.

7. ANAGÁLLIS.—*Leaves* cauline; *calyx* inferior, 5-cleft to the base; *corolla* rotate or funnel-shaped, with

little or no tube; *filaments* hairy; *capsule* splitting all round.

8. Centúnculus.—*Leaves* cauline; *calyx* inferior 4 or 5-cleft to the base; *corolla* with an inflated, subglobose tube, 4 or 5-cleft; *stamens* 4 or 5, with smooth filaments; *capsule* splitting all round.

9. Sámolus.—*Leaves* radical and cauline; *calyx* half-superior, 5-cleft, persistent; *corolla* salver-shaped; *capsule* opening with 5 reflexed teeth.



HOTTÓNIA PALÚSTRIS (*Water Violet*).

1. Hottónia (Water Violet).—Floating aquatic plants with whorled, finely divided, pinnate, submerged *leaves*; *flowers* whorled, stalked; *calyx* 5-cleft almost to the base; *corolla* salver-shaped, with a short

tube; *stamens* 5; *capsule* many-seeded, with 5 valves cohering at the top. (Named after Peter Hotton, Professor of Botany at Leyden.)

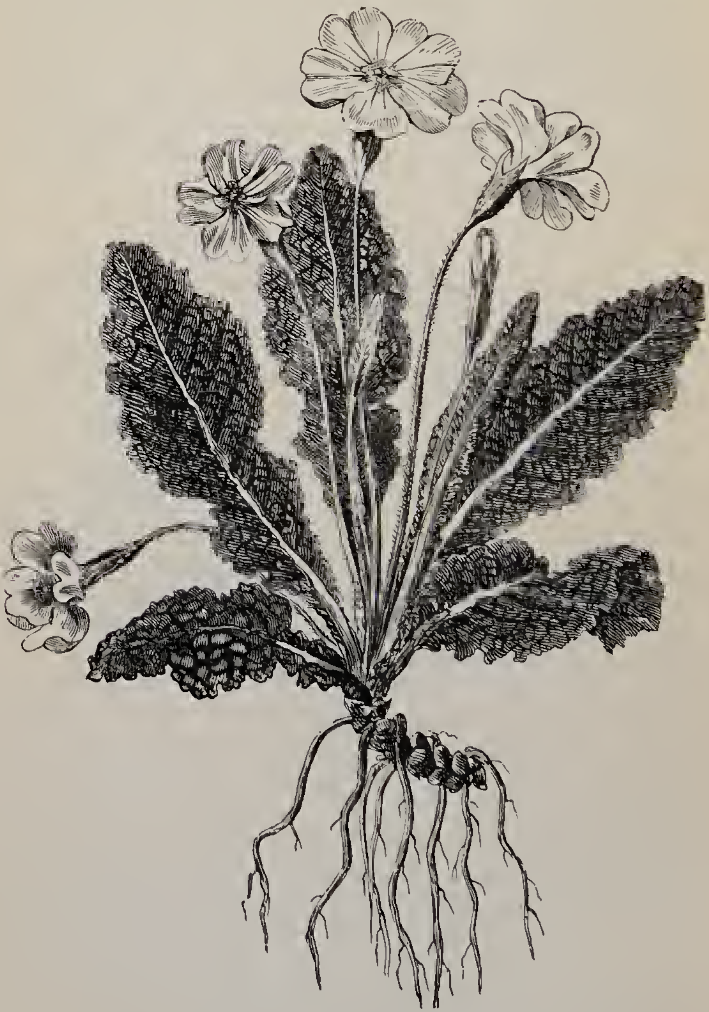
1. *H. palústris* (Water Violet).—The only British species, with large, handsome, lilac *flowers* with a yellow eye, arranged in whorls around a smooth, succulent, leafless stalk, which rises several inches out of the water.—Ponds and ditches; local.—Fl. May, June. Perennial.

2. Prímula (Primrose).—Plants with a *rhizome*, radical, simple *leaves* and *flowers* in *umbels* with an *involucre*; *calyx* tubular, 5-cleft; *corolla* salver- or funnel-shaped, with a long, cylindrical tube; *stamens* 5, epipetalous, included either in the throat of the corolla-tube, or, on other plants, half-way down it; *style* short in the former case, long in the latter; *capsule* 5-valved with 10 teeth. This *heterostyly* is connected with insect-pollination, the short-styled form having its stigma dusted with pollen from the similarly-situated anthers of a long-styled plant, and *vice versâ*. (Name a diminutive from the Latin *prímus*, first, from the early flowering of many species.)

1. *P. acáulis* (Primrose).—Among the most welcome of spring flowers, and almost too well known to need any description; *leaves* obovate, tapering downwards, wrinkled, hairy beneath, toothed; *umbels* usually with very short *peduncles* and long, pink, hairy *pedicels; flowers* an inch or more across; *calyx* with 5 longitudinal plaits and acute teeth; *corolla* of a pale yellow, or, as artists often maintain, a delicate green, turning green in drying, or occasionally white, red, or lilac, with a flat limb, having a faint but characteristic fragrance.—Banks and woods; abundant.—Fl. December—May. Perennial.

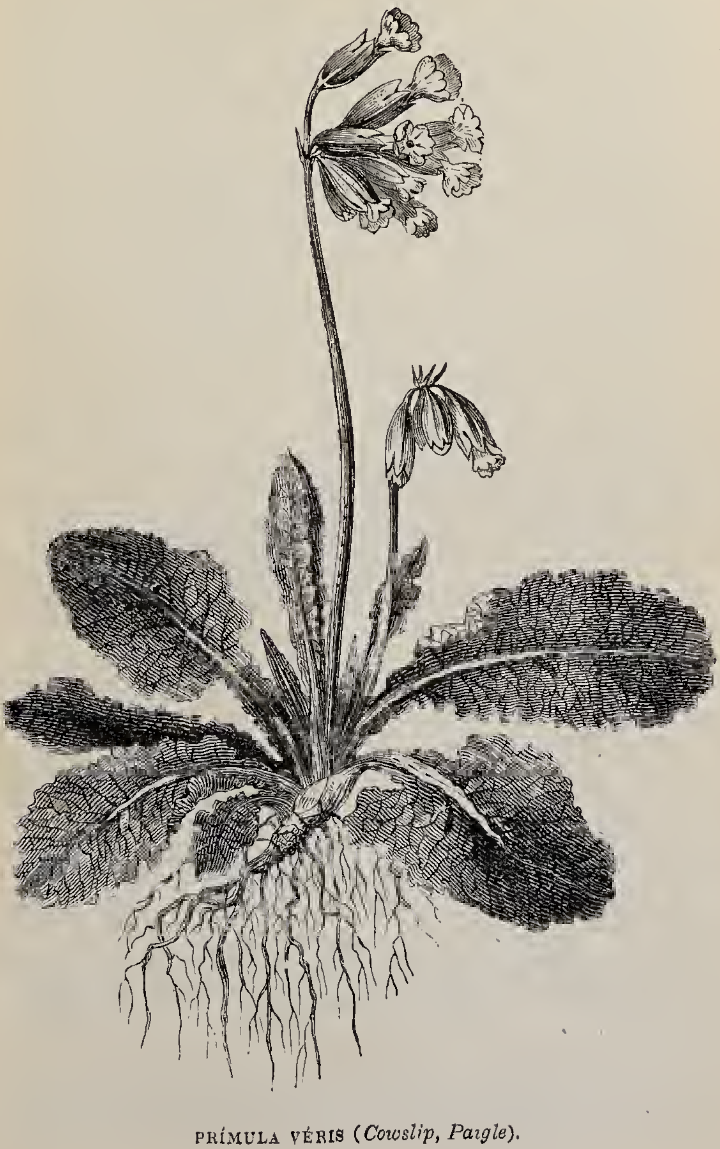
2. *P. véris* (Cowslip).—Almost an equal favourite; *leaves* ovate, abruptly contracted below; *umbels* with

a long, erect, downy *peduncle*, short *pedicels*, and



PRIMULA ACÁULIS (*Primrose*).

drooping *flowers ; calyx* bell-shaped with short, broad



PRÍMULA VÉRIS (*Cowslip, Paigle*).

teeth ; *corolla* funnel-shaped, deep yellow, with 5 reddish spots in the eye, fragrant.—Pastures ; common. Among the many pleasing purposes to which these flowers are put by children, none is prettier than that of making *Cowslip Balls.* The method is as follows : —Choosing only such umbels as have all the flowers open, pick them off as close as possible to the top of the peduncle and hang them, close together, along a string about 1½—2 feet long, stretched between the backs of two chairs. When the string is full, carefully loosen its ends, and raising them gently tie them together, so drawing all the flower-heads into a ball. —Fl. April, May. Perennial.

3. *P. elátior* (Oxlip).—*Leaves* like those of the Cowslip ; *umbel* long-stalked : *flowers* not drooping, salver-shaped, but smaller and paler, and more buff than those of the Primrose, with a smell of apricots ; *calyx* tubular ; *corolla* flat, not concave.—Woods in North-west Essex and neighbouring parts of Herts, Cambridgeshire and Suffolk only. The name *Paigle* is applied locally to this species and elsewhere to the Cowslip.—Fl. April, May. Perennial.

4. *P. farinósa* (Bird's-eye Primrose).—*Leaves* small, obovate, crenate, covered below with a white or sulphur-like meal ; *umbels* on peduncles 2—8 in. high ; *calyx-teeth* long, linear, obtuse : *corolla* lilac, with a yellow eye, lobes distant.—Mountain pastures, from Yorkshire northwards.—Fl. June, July. Perennial.

5. *P. scótica* (Scottish Primrose).—Resembling the last, but only half its size, with broader *leaves*, shorter and broader *calyx-teeth*, and a deeper blue-purple *corolla* with its lobes touching, is a rare species growing in the Orkneys, and in a few places in the extreme north of Scotland.—Fl. May—September. Perennial.

*3. CÝCLAMEN (Sow-bread).—Plants with large, tuber-like, underground *stems ;* radical, petiolate, broad *leaves; flowers* solitary, drooping, on long, leafless, erect peduncles, which twist spirally when in fruit; *calyx* 5-cleft; *corolla* with a short, bell-shaped tube and long, reflexed lobes to its limb; *capsule* opening with 5 teeth. (Name from the Greek, referring to the round corm.)

1.* *C. hederæfólium* (Ivy-leaved Sow-bread).—The only species found in Britain; but a doubtful native. Remarkable for its globular, turnip-like, brown *corm*, and nodding pink *flowers* with reflexed *petals*. The *leaves* are produced after the flowers. As the *fruit* ripens, the flower-stalk curls spirally and buries it in the earth. The corm is intensely acrid.—Woods in Kent, Sussex, and Surrey.—Fl. August—September. Perennial.

4. LYSIMÁCHIA (Loosestrife).—Plants of various habit with entire, cauline *leaves; calyx* 5—6-cleft to the base; *corolla* rotate or cup-shaped, yellow in British species; *capsule* generally 5-valved. (Name in Greek having the same meaning as the English name.)

1. *L. thyrsiflóra* (Tufted Loosestrife).—A stout, glabrous, erect plant with runners, unbranched above; *leaves* opposite, sessile, lanceolate; *flowers* small, numerous, in dense, stalked, axillary racemes, yellow, dotted with orange.—Marshes, mostly in the north; rare.—Fl. June, July. Perennial.

2. *L. vulgáris* (Great Yellow Loosestrife).—A stout, pubescent, erect, branched plant, several feet high, with runners; *leaves* opposite, or 3—4 in a whorl, sessile, ovate-lanceolate; *flowers* rather large, subcampanulate, yellow, dotted with orange, in terminal panicled *cymes*.—River-banks; common.—Fl. July, August. Perennial.

3.* *L. punctáta*, a naturalised exotic, is a smaller, downy plant, with fewer *flowers* and *petals* fringed with glandular hairs.

4.* *L. ciliáta*, an American species naturalised in Cumberland, is taller and has subcordate *leaves* on ciliate stalks, and 5 *staminodes* between the stamens.

5. *L. Nummulária* (Money-wort, Herb-twopence, Creeping Jenny).—A very pretty glabrous plant, with creeping *stems*, often more than a foot long; *leaves* opposite, ovate, slightly stalked, shining; *flowers* rather large, cup-shaped, solitary, or in pairs in the axils, yellow.—Banks of rivers and damp woods; common. It often drapes wet banks very gracefully, and is much planted on rockeries. Its leaves some-

LYSIMÁCHIA NUMMULÁRIA (*Money-wort*).

times turn rose-pink in autumn.—Fl. June, July. Perennial.

6. *L. némorum* (Yellow Pimpernel, Wood Loosestrife).—A very graceful plant, approaching the Scarlet Pimpernel in habit, but somewhat larger and more glossy; *stem* spreading, often reddish: *leaves* opposite, shortly stalked, ovate, acute; *flowers* solitary, on very slender, axillary peduncles, bright yellow, star-like and very pretty, from $\frac{1}{2}$—$\frac{2}{3}$ in. across.—Shady woods; common.—Fl. May—August. Perennial.

LYSIMÁCHIA NÉMORUM (*Wood Loosestrife, Yellow Pimpernel*).

5. TRIENTÁLIS (Chickweed Winter-green).—Glabrous plants with slender, creeping *rhizomes*; erect, unbranched *stems*, a single whorl of 5 or 6 leaves, and a few white *flowers* on slender peduncles; *calyx* 5—9-cleft; *corolla* rotate; *stamens* 5—9; *capsule* opening with 5 revolute valves. (Name of doubtful etymology.)

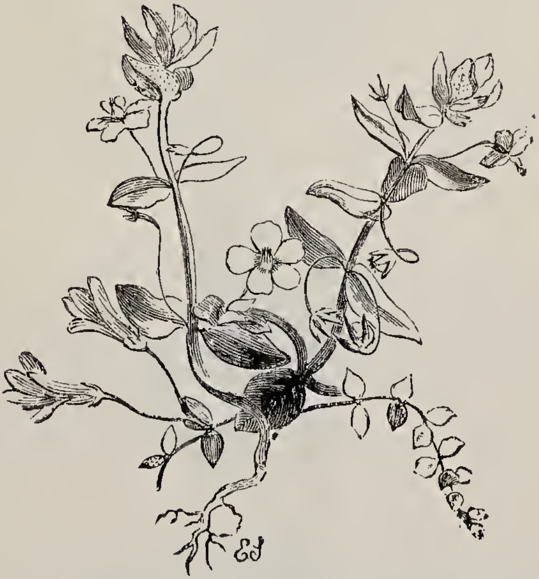
1. *T. europæa* (Chickweed Winter-green).—The only European species, and the only British plant

referred to the Linnean Class Heptandria, though the stamens are not invariably 7 in number. It grows 4—6 in. high, has large, obovate *leaves* and delicate white *flowers*.—Woods from Yorkshire and Lancashire northwards.—Fl. June, July. Perennial.

GLAÚX MARÍTIMA (*Sea Milkwort*).

6. Glaúx (Sea-Milkwort), containing only one species, *G. marítima*, a small, glabrous, fleshy, marine

plant, 3—6 in. high, growing in thick patches, resembling *Arenária peplóides* in its habit, with numerous ovate, entire, opposite and decussate *leaves*, and axillary pink *flowers* which are destitute of *corolla.*—Sea-shores and salt-marshes ; common. (The name is from the Greek *glaukos*, sea-green.)—Fl. June —August. Perennial.



ANAGÁLLIS ARVÉNSIS (*Scarlet Pimpernel*) and A. TENÉLLA (*Bog Pimpernel*).

7. ANAGÁLLIS (Pimpernel).—Slender little plants with opposite, entire *leaves* ; axillary *flowers* on thread-like stalks ; *corolla* rotate or funnel-shaped ; *filaments* hairy ; *capsule* splitting all round. (Name in Greek denoting that the plant excites pleasure.)

1. *A. arvénsis* (Scarlet Pimpernel, Poor Man's

Weather-glass). — A pretty little plant, generally prostrate; *leaves* sessile, ovate, dotted beneath; *petals* crenate, fringed with minute glandular hairs, expanding only in fine weather, usually bright scarlet, but occasionally pink, white with a red eye, all white, or perhaps blue.—Cultivated ground; abundant.—Fl. May—October. Annual.

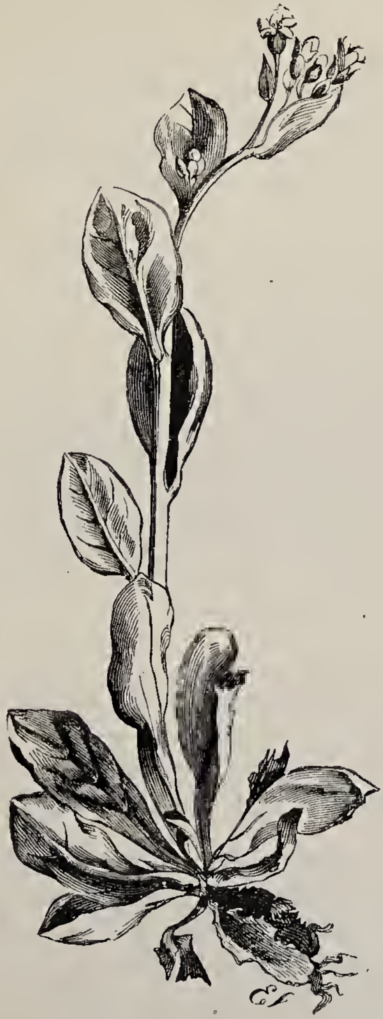
2. *A. cærúlea* (Blue Pimpernel).—A more erect plant, without the fringe to its *petals*, which are usually bright blue; but perhaps occasionally red. Much less common.—Fl. May—October. Annual.

3. *A. tenélla* (Bog Pimpernel).—A beautiful little plant with very slender creeping *stems*, 3—4 in. long; small, roundish, stalked *leaves*, shorter than the flower-stalks; and erect, funnel-shaped, rose-pink *flowers*, larger than those of the *Scarlet Pimpernel.*—Boggy ground and sides of rivulets; common.—Fl. June—August. Perennial.

CENTÚNCULUS MÍNIMUS (*Chaffweed*).

8. CENTÚNCULUS (Chaffweed, Bastard Pimpernel).—Minute plants, with *leaves* partly opposite, partly scattered; *flowers* axillary, sub-sessile, minute, often 4-merous; *corolla* with an inflated, sub-globose tube; *filaments* not hairy; *capsule* splitting all round. (Name of doubtful etymology.)

1. *C. minimus* (Chaffweed, Bastard Pimpernel.)—



SÁMOLUS VALERÁNDI (*Brookweed*).

The only British species, one of the smallest among

British flowering plants, rarely exceeding an inch in height, and often much less. It is nearly allied to the *Pimpernels*, and at the first glance might be mistaken for a stunted specimen of *Anagállis arvénsis.* It is sometimes branched; but very frequently consists of a single *stem*, 6 or 8 ovate, acute *leaves*, and as many inconspicuous, nearly sessile, pale pink *flowers*.—Damp gravelly places, especially where water has stood during winter.—Fl. June—August. Annual.

9. SÁMOLUS (Brookweed).—*Leaves* partly radical partly cauline, and scattered; *flowers* in a terminal, bracteate corymb; *calyx* half superior, 5-cleft, persistent; *corolla* salver-shaped, white; *stamens* 5, epipetalous, alternating with 5 *staminodes*; *capsule* opening with 5 reflexed teeth. (Name said to be from the island of Samos, where Valerandus, a botanist of the sixteenth century, gathered our British species.)

1. *S. Valerándi* (Brookweed).—The only British species, a smooth, pale green, herbaceous plant, with blunt, fleshy *leaves*, and one or more terminal clusters of very small white *flowers*, crowded at first, but finally becoming distant, resembling in this respect the habit of some *Cruciferæ*.—Watery places; common.—Fl. June—September. Perennial.

ORD. XLVIII. OLEÁCEÆ.—THE OLIVE FAMILY.

Trees or shrubs, chiefly inhabiting the temperate regions of the Northern Hemisphere. Their *branches* are opposite, and often end in conspicuous buds; the *leaves*, also opposite, are either simple or pinnate, and exstipulate; and the *flowers* are in panicled cymes. The *calyx* is either 4-cleft, inferior and persistent, or absent; the *corolla* either polysymmetric, hypogynous, of 4 united or free petals, valvate in bud, or absent; *stamens* 2; *ovary* 2-chambered, with 2—3 ovules in each chamber; *style* 1; *fruit* a samara, a capsule, or berry-like, seldom perfecting more than 2 *seeds*. By far the most important plant in the Order is the Olive (*Ólea europǽa*), from which it takes its name, one of the earliest plants cultivated by man. Its bark is bitter and astringent, and its wood remarkably close-grained, handsomely mottled, and durable. The fruit is fleshy and drupe-like, enclosing a hard stone, and the oil is expressed from the fleshy pericarp. The Lilac (*Syrínga vulgáris*) is a favourite in our shrubberies. *Fráxinus Ornus*, the Flowering or Manna Ash of Southern Europe, also occasionally grown, has white flowers, and exudes a sugary substance known as *manna*, which is sometimes used in medicine. The wood of this genus is valued for its strength and elasticity.

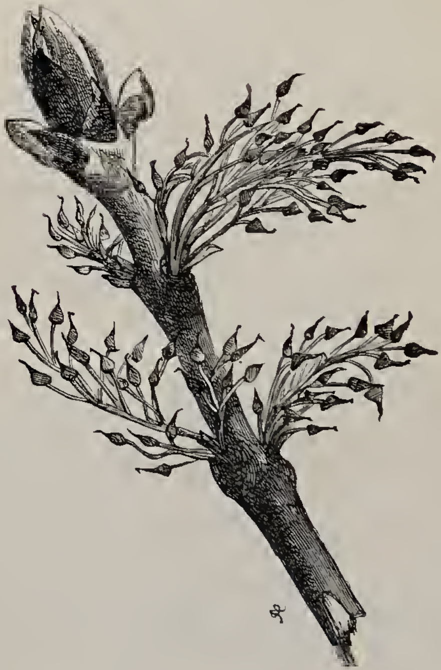
1. Fráxinus.—*Leaves* mostly pinnate; *calyx* and *corolla* absent; *fruit* a pendulous single samara.

2. Ligústrum.—*Leaves* simple; *calyx* cup-shaped, 4-toothed; *corolla* funnel-shaped, 4-lobed; *fruit* a nuculane.

1. Fráxinus (Ash).—Trees with deciduous *leaves*, generally pinnate; polygamous *flowers*, with or without a 4-merous *calyx* and *corolla*; *fruit* a compressed samara, winged at the tip. (Name, the Latin name of the tree, perhaps referring to the ease with which it may be split.)

1. *F. excélsior* (Common Ash).—A noble tree, characterised by the smooth, light, ash-coloured *bark* of its younger branches, of which the lower ones droop, and curve upwards again at the extremities; by its large, black, terminal *buds*; by the large, unequally pinnate *leaves* of 9—15 leaflets, which are lanceolate and serrate; by the dense clusters of *flowers*, some consisting only of two purple-black *stamens*, others

only of an ovary, and others of both; and by the tufts of pendulous seed-vessels, popularly called "keys," which remain attached to the tree until the spring. A variety is occasionally found with only the terminal leaflet to its leaves.—Woods and hedges; common.—Fl. April, May, before leafing. Perennial.

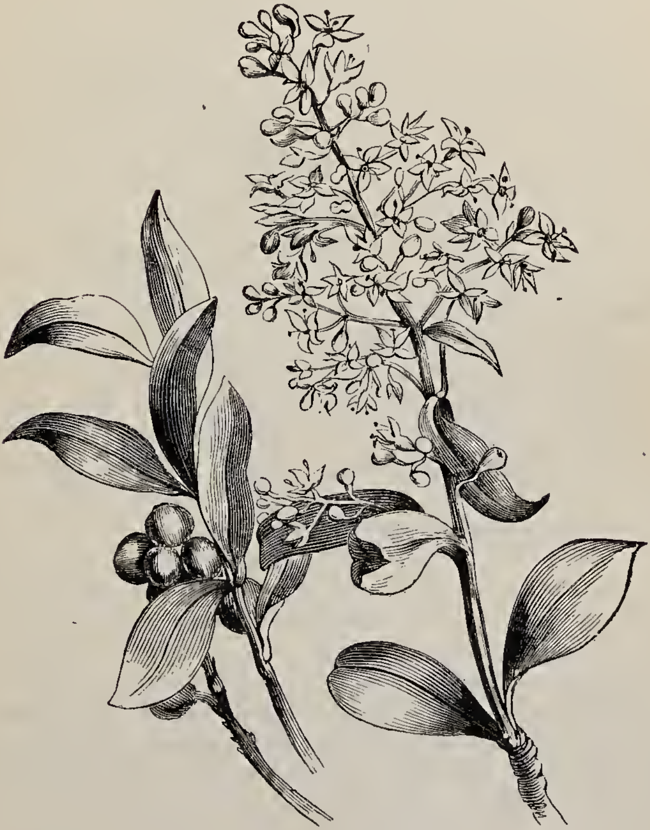


FRÁXINUS EXCÉLSIOR (*Ash*).

2. LIGÚSTRUM (Privet).—Shrubs with simple, often evergreen *leaves; flowers* perfect, in terminal panicled cymes; *calyx* cup-shaped, 4-toothed, deciduous; *corolla* funnel-shaped, with 4 spreading lobes; *fruit* globular, berry-like. (Name, the Classical name of the plant,

connected with *ligare*, to bind, from the use made of the twigs.)

1. *L. vulgáré* (Common Privet).—The only British species, a common hedge-bush, with opposite, smooth, elliptical, nearly evergreen *leaves ;* dense panicles of white, sickly-smelling *flowers,* and polished, globular, black, berry-like *fruits.* It is commonly used for



LIGÚSTRUM VULGÁRÉ (*Privet*).

garden-hedges in towns, not being injured by smoke. —Fl. June, July. Perennial.

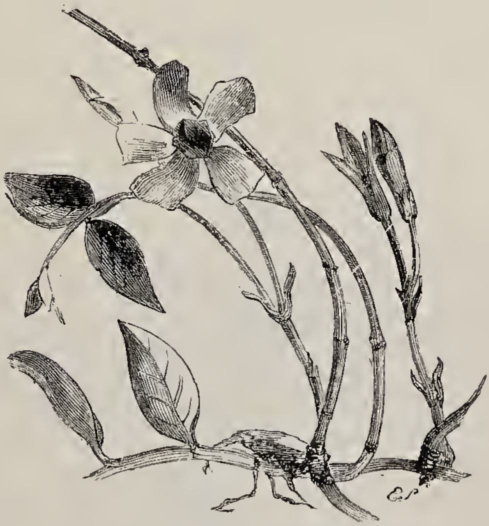
ORD. XLIX. APOCYNÁCEÆ.—PERIWINKLE FAMILY.

Trees, shrubs, or herbs, mostly tropical, poisonous, and abounding in a milky juice ; *leaves* simple, opposite ; *flowers* showy, polysymmetric ; *calyx* 5-cleft, persistent ; *corolla* 5-lobed, the lobes twisted when in bud, and when expanded usually oblique ; *stamens* 5, inserted in the corolla-tube; *ovary* 2-chambered ; *fruit* various. The beautiful Oleander (*Nérium Oleánder*), common in greenhouses, is a member of this Order. It is very poisonous, the wood, when powdered, being sometimes used to kill rats. It is related that in 1809, when the French troops were before Madrid, a soldier formed the unfortunate idea of cutting branches of Oleander (which in Spain is very common and reaches a considerable size) to serve as spits and skewers for their meat when roasting. The wood having been stripped of its bark, and brought in contact with the meat, was productive of most direful consequences, seven soldiers dying out of twelve who ate of the roast. A number of species in the Order belonging to the genera *Vahea*, *Willughbeia*, and *Landolphia*, natives of Tropical Africa and the Malay Archipelago, are valuable sources of indiarubber ; and a few other genera contain medicinal plants. *Vinca*, the only genus represented among British plants, is astringent and acrid.

1. VÍNCA (Periwinkle).—Slender, trailing plants with evergreen *leaves :* solitary salver-shaped *flowers* with 5 oblique lobes to the *corolla : style* resembling the shaft of a pillar surmounted by a double capital ; *fruit* of 2 erect, slender, many-seeded, indehiscent

carpels. (Name from the Latin *vincio*, I bind, from the cord-like stems.)

1. *V. mínor* (Lesser Periwinkle).—*Stem* trailing, rooting, sending up short, erect, leafy shoots, which bear the flowers ; *leaves* and *sepals* glabrous ; *corolla* 1 in. across, violet, with a tube thrice as long as the calyx-lobes.—Woods, especially in the West of England, where it often entirely covers the ground with its glossy leaves. A white variety occurs in Devonshire, and in gardens it is often met with bearing variegated leaves and double purple, blue, or white flowers.—Fl. March—June. Perennial.



VÍNCA MÍNOR (*Lesser Periwinkle*).

2.* *V. májor* (Greater Periwinkle).—A more erect plant, much larger than the last, with the margins of its *leaves* and *sepals* minutely fringed, and the latter as long as the *corolla-tube*, is not indigenous, occurring only near houses.—Fl. April, May. Perennial.

ORD. L. GENTIÁNEÆ.—THE GENTIAN FAMILY.

An Order comprising between 400 and 500 species, distributed throughout all climates, from the regions of perpetual snow to the hottest parts of South America and India; but mainly northern and subalpine. Under the Equator they do not occur below 7,850 feet above sea-level; in the Himalayas and in the Rocky Mountains species reach altitudes of 16,000 feet; in Southern Europe *Gentiána prostráta* grows at 6,000—9,000 feet above the sea; on Behring's Straits and on the Straits of Magellan species occur just above the level of the sea; but they are very rare both in the Arctic and Antarctic Regions. In South America and New Zealand the prevailing colour of the flower is said to be red, and in Europe it is blue, yellow and white being uncommon. They are mostly herbs, erect and glabrous, with opposite, simple, sessile *leaves*, and often large, brilliantly coloured *flowers* which are polysymmetric and usually 5-merous. The *calyx* is inferior, persistent, usually 5-, but sometimes 4—8-cleft; *corolla* often persistent, twisted when in bud, with lobes equalling those of the calyx in number, and often fringed about the mouth of the corolla-tube; *stamens* equalling in number, and alternate with, the lobes of the corolla; *carpels* 2, united in a 1-chambered *ovary*, with 1 *style* and 2 *stigmas*; *fruit* a many-seeded capsule. All the members of the Order are intensely bitter, and form valuable tonic medicines. *Gentiána lútea*, collected in the mountains of Central and Southern Europe, is the species most commonly employed; but there is little doubt that other species might be employed with equally good effect.

1. MICROCÁLA.—Little branched; *flowers* yellow, 4-merous; *calyx* tubular; *corolla* funnel-shaped; *stigma* undivided.

2. BLACKSTÓNIA.—*Leaves* perfoliate; *flowers* yellow; *calyx* deeply 6—8-cleft; *corolla* rotate, 6—8-lobed; *stamens* 6—8; *stigma* 2—4-cleft.

3. ERYTHRÆA.—*Flowers* mostly 5-merous; *corolla* funnel-shaped; *anthers* becoming spirally twisted; *stigmas* 2.

MICROCÁLA FILIFÓRMIS (*Least Gentianella*).

4. CICÉNDIA. — Branched; *flowers* pink, 4—5-merous; *calyx-lobes* divided to the base; *corolla* salver-shaped; *stamens* 4; *stigma* 2-fid.

5. GENTIÁNA.—*Flowers* mostly 5-merous; *corolla* funnel- or salver-shaped, tube subclavate; *anthers* not twisted; *stigmas* 2.

6. MENYÁNTHES.—*Leaves* scattered, ternate; *flowers*

5-merous; *corolla* funnel-shaped, with 5 lobes, induplicate in the bud, fringed all over the inner surface.

7. LIMNÁNTHEMUM. — *Leaves* simple, orbicular, floating; *flowers* 5-merous; *corolla* rotate, with 5 lobes, induplicate in the bud, fringed at the base only.

1. MICROCÁLA (Gentianella).—A minute, slender, little-branched plant; *flowers* small, yellow, 4-merous; *calyx* tubular; *corolla* funnel-shaped; *stamens* 4; *anthers* not twisted; *style* not persistent; *stigma* undivided. (Name from the Greek *mícros*, small, *kalos*, beautiful.)

1. *M. filifórmis* (Least Gentianella). — The only British species, a minute, slender, glabrous, plant, 2—4 in. high, but little branched; *leaves* subulate, soon withering; *flowers* yellow, only expanding in bright sunshine.—Sandy heaths in the south, where water has stood during the winter; rare.—Fl. July—October. Annual.

2. BLACKSTÓNIA (Yellow-wort).—Erect, glaucous plants with perfoliate leaves; *flowers* in loose dichasial cymes, yellow, 6—8-merous; *calyx* deeply lobed; *corolla* rotate; *ovary* 1-chambered, many-ovuled; *style* not persistent, *stigma* 2—4-cleft. (Named in honour of John Blackstone, an English botanist of the 18th century.)

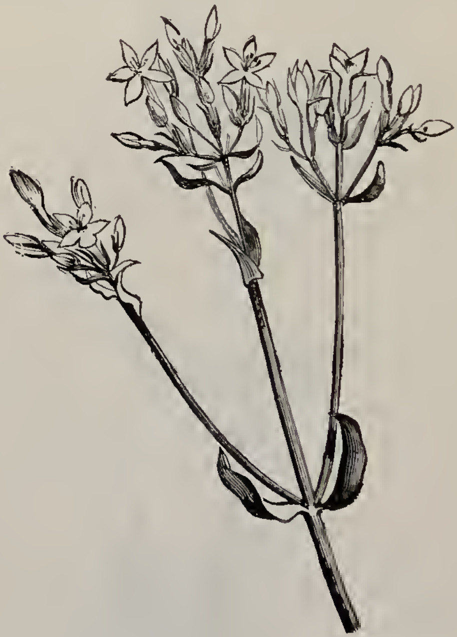
1. *B. perfoliáta* (Perfoliate Yellow-wort).—The only British species, an erect plant, 12—18 in. high, remarkable for its glaucous hue, and for its pairs of *leaves*, which are rather distant, and are united at the base (connate) with the stem passing through them, whence the name *Perfoliate*. The *flowers*, which are large and handsome, are yellow, and expand only

between 9 o'clock in the morning and 4 p.m.—Chalk and limestone pastures; not uncommon.—Fl. June—September. Annual.

3. ERYTHRÆA (Centaury).—Erect, herbaceous plants with angular *stems; leaves* sometimes united at the base; *flowers* in terminal, trichasial cymes; *corolla* funnel-shaped, usually 5-lobed, pink, white,

BLACKSTÓNIA PERFOLIÁTA (*Perfoliate Yellow-wort*).

or yellow; *stamens* 4—5; *anthers* becoming spirally twisted; *style* simple, not persistent; *stigmas* 2. (Name from the Greek *eruthros*, red, from the common colour of the flowers, the English name, like the Latin, *Centaúrea*, referring to the Centaur Chiron, who in Greek mythology was famous for his medicinal skill.)



ERYTHRǼA CENTAÚRIUM (*Common Centaury*).

1. *E. Centaúrium* (Common Centaury).—A pretty plant, 2—18 in. high, with square, erect, green *stems*, much branched above; *leaves* elliptic-oblong, with strong parallel ribs, and remarkably smooth; *flowers* in terminal, corymbose, trichasial cymes, rose-pink, or rarely white, only opening in fine weather; *calyx* half as long as corolla-tube; *filaments* springing from the

top of the corolla-tube.—Dry pastures and waste places; common.—Fl. July, August. Annual.

2. *E. latifólia* (Broad-leaved Centaury), a stunted form, with broadly elliptic *leaves*, and *flowers* in dense, trichasial tufts, with *calyx* as long as the corolla-tube, and *filaments* as in the last, occurs only on the sandy shore near Liverpool.—Fl. June—September. Annual.

3. *E. littorális* (Dwarf Tufted Centaury), a similar, stunted, but unbranched form, with oblong-linear, blunt *leaves* above and spathulate radical ones, occurs more frequently on sandy shores.—Fl. July, August. Annual.

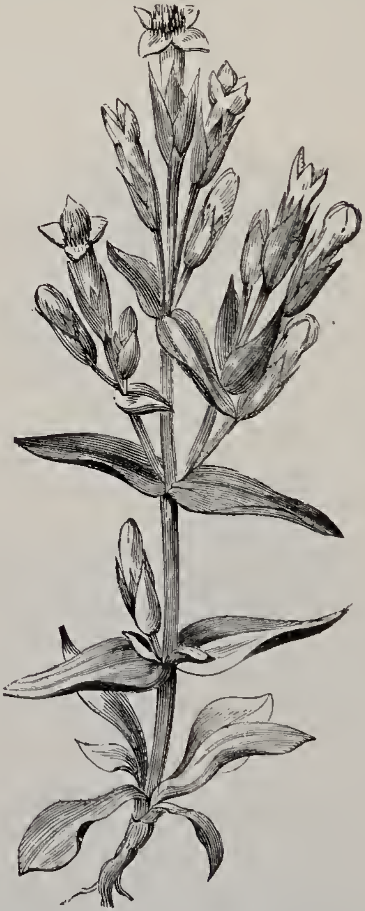
4. *E. pulchélla* (Dwarf Centaury), a minute, slender plant, resembling *Microcála filifórmis*, 1—8 in. high, but much branched, with a few stalked *flowers*, rose-pink, as in the other species, with *calyx* rather shorter than the corolla-tube, occurs also on sandy shores, or on wet sand at inland localities.—Fl. July—September. Annual.

5. *E. capitáta* (Tufted Centaury) has an unbranched *stem*, not more than 3 in. high, broadly ovate, distinctly 3-nerved *leaves*, a cylindrical *corolla-tube* and a *calyx* equalling it in length, and differs from all the other forms in its *filaments* springing from the base of the corolla-tube.—Downs in the Isle of Wight and Sussex.—Fl. July, August. Annual or Biennial.

4. CICÉNDIA (Guernsey Gentianella), represented by the species *C. pusílla*, is even smaller and more slender than *Microcála*. It is from 1—4 in. high; has spreading *branches;* linear *leaves;* pink *flowers*, and *calyx-lobes* not apparently united into any tube at their base.—Sandy commons, sometimes flooded, in Guernsey.—Fl. July—September. Annual.

5. GENTIÁNA (Gentian).—Herbs with opposite, sessile *leaves; flowers* mostly 5-merous; *corolla* funnel- or

salver-shaped, tube widening upwards and then constricted, blue, purple, or lilac, or rarely pink in British species ; *anthers* not twisted ; *stigmas* 2. (Name from *Gentius*, King of Illyria, who is said to have discovered its medicinal value.)



GENTIÁNA CAMPÉSTRIS (*Field Gentian*).

1. *G. Pneumonánthé* (Marsh Gentian).—*Stem* erect, leafy, unbranched, 4—10 in. high, with one or two large, bell-shaped, deep blue, or very rarely pink, *flowers* with 5 green stripes and with no fringe in the throat of the corolla-tube.—Boggy heaths; rare.—Fl. August, September. Annual.

2. *G. vérna* (Spring Gentian).—A tufted plant with runners and rather large, solitary, sessile, intensely blue *flowers*, with 5 smaller 2-cleft segments between the lobes of the *corolla*.—Wet limestone rocks in Teesdale and in Ireland; very rare.—Fl. April—June. Perennial.

3. *G. nivális* (Small Alpine Gentian).—A more erect, slightly branched species, with *flowers* smaller than in the last, several together and shortly stalked. —Summits of Highland mountains; very rare.—Fl. —August, September. Annual.

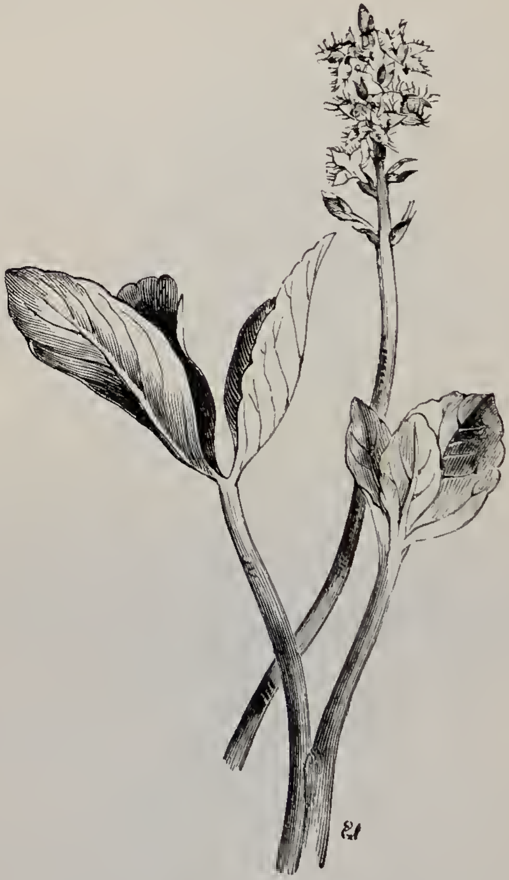
4. *G. Amarélla* (Common Autumn Gentian).—A remarkably erect plant, with a square, leafy, purplish, much-branched *stem*, 6—12 in. high; numerous, rather large, 5-merous *flowers*, which only expand in bright sunshine; *calyx* with 5 nearly equal lobes, a little shorter than the cylindrical tube of the lurid, purplish-blue *corolla*, the throat of which is fringed with hairs.—Dry chalky pastures; common—Fl. August, September Annual.

5. *G. germánica* (Scarce Autumn Gentian), differing in having unequal lobes to the *calyx*, much shorter than the obconic tube of the bluish-lilac *corolla*, is also a larger and stouter, but rare plant.

6. *G. campéstris* (Field Gentian).—Resembling *G. Amarélla* in habit, but distinguished by its 4-cleft *calyx*, of which the two outer lobes are much larger than the inner two, and by the pale lilac 4-cleft, salver-shaped *corolla*.—Dry pastures; common.—Fl. July—October. Annual.

7. *G. báltica* (Baltic Gentian), with a *corolla-tube* shorter than the *calyx*, which resembles that of

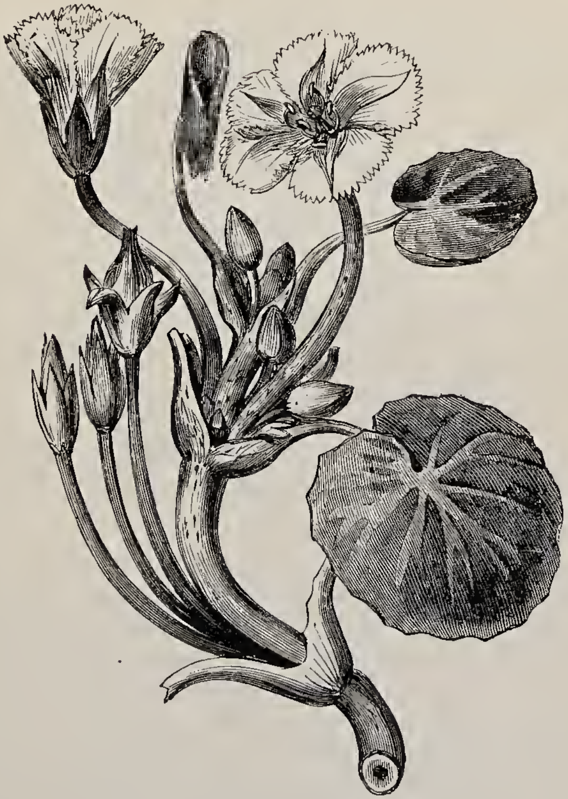
G. campéstris, occurs on downs in Norfolk, Suffolk, Devon, Cornwall, and North Wales.—Fl. August—October. Annual.



MENYANTHES TRIFOLIÁTA (*Buck-bean, Marsh Trefoil*).

6. Menyánthes (Buck-bean, Bog-bean, Marsh Trefoil), represented by the one species *M. trifoliáta*, is the only British plant in the Order with divided

leaves. The *stem* scarcely rises above the water or wet ground in which it grows, but is overtopped by the large, ternate *leaves,* which in shape and colour somewhat resemble those of the Windsor Bean, and have



LIMNÁNTHEMUM PELTÁTUM (*Water Villarsia*).

sheathing bases to their petioles, opposite to one of which rises a long-stalked *raceme* of exceedingly beautiful *flowers.* These, when in bud, are pink, and when fully expanded have the inner surface of the 5 fleshy *petals* thickly covered with a white, lace-like fringe.—Spongy bogs; common.—The *rhizome* is intensely bitter, and is said to be the most valuable of tonics.—Fl. May—July. Perennial.

7. LIMNÁNTHEMUM (Villarsia). — Aquatic plants with simple, orbicular, floating *leaves ; flowers* yellow, 5-merous, in umbels ; *corolla* rotate, induplicate in bud, fringed at the base only, deciduous. (Name from the Greek *límné*, a pool, *anthos*, a flower.)

1. *L. peltátum* (Water Villarsia). — The only British species, with the habit of a Water-lily ; the *leaves* nearly round, deeply cordate, polished, spotted with purple ; *flowers* an inch across, yellow, and fringed.—Ditches communicating with the Thames, and elsewhere in the south ; rare.—Fl. July, August. Perennial.

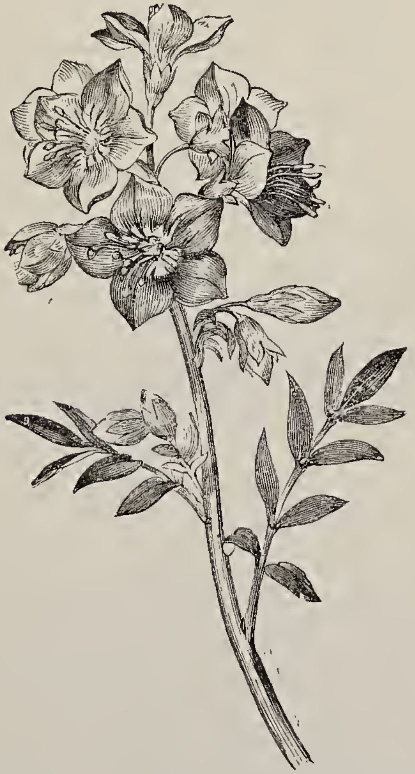
ORD. LI. POLEMONIÁCEÆ.—THE JACOB'S LADDER FAMILY.

A small Order of herbaceous plants, often with showy flowers, mostly natives of the western temperate parts of America, and unknown within the Tropics. They have a deeply 5-cleft, persistent, inferior *calyx ;* polysymmetric, 5-lobed *corolla ; stamens* 5, inserted on the corolla-tube ; *ovary* 3-chambered ; *style* single ; *stigma* 3-cleft ; *capsule* 3-chambered, 3-valved. None of the species possess remarkable properties, but several are favourite garden flowers, such as *Phlox, Polemónium*, and *Cobæa*.

1. POLEMÓNIUM (Jacob's Ladder). — *Leaves* scattered, unequally pinnate ; *calyx* campanulate ; *corolla* rotate ; *stamens* bearded at the base and lying on one

side of the flower; chambers of the *capsule* many-seeded. (Name, the Greek name of the plant.)

1. *P. cœrúleum* (Jacob's Ladder, Greek Valerian).—The only British species, a tall, erect plant, 1—2 feet high, with an angular, hollow *stem;* smooth, pinnate *leaves* with 13—25 leaflets; and numerous blue or white *flowers,* about an inch across, in a terminal cluster.—Woods in the north; rare. A common garden flower, not easily rooted out where it has once established itself.—Fl. June, July. Perennial.



P. CŒRÚLEUM (*Greek Valerian, Blue Jacob's Ladder*).

ORD LII. BORAGÍNEÆ.—THE BORAGE FAMILY.

A considerable Order of herbs or shrubs, principally natives of the warmer temperate regions of the Old World, with scattered *leaves*, which are usually covered with hairs or bristles rising from a swollen base. This character was considered by Linnæus sufficiently constant to give to the Order the name *Asperifóliæ*, or Rough-leaved plants; but the present name of the Order is preferable as being more comprehensive, a few species in it having perfectly smooth leaves. Most members of the Order bear their *flowers* in rolled up, scorpioid racemes, a few expanding at a time. The *calyx* is inferior, deeply 5-, or rarely 4-cleft, and persistent; the *corolla* hypogynous, 5-, or rarely 4-cleft, frequently having teeth at the mouth of the tube, and most commonly blue or purple. Many, when first opening, however, are of a pink hue, which subsequently deepens, so that it is not unusual to see flowers of different tints in the same cluster. The *stamens* are 5, inserted on the corolla and alternate with its lobes; the *carpels* 2, forming a 4-parted, 4-seeded *ovary*, with a single, gynobasic *style;* and the *fruit* a regma of 4, rarely 2, one-seeded nutlets. They possess no remarkable properties, but abound in a soft alkaline mucilage, which gives a coolness to beverages in which they are steeped, on which account Borage is an ingredient in claret-cup. The roots of Alkanet and some others contain a red substance which is used as a dye. *Myosótis palústris*, the *Vergiss-mein-nicht* of German romance, has now obtained the English name "Forget-me-not," formerly applied for very unromantic reasons to *Ájuga Chamǽpitys*.

1. CYNOGLÓSSUM.—*Calyx* 5-cleft; *corolla* polysymmetric, funnel-shaped, its mouth closed by prominent blunt scales; *nutlets* with hooked bristles.

*2. Aspérugo.—*Calyx* with 5 leafy lobes and smaller alternate teeth; *corolla* polysymmetric, funnel-shaped, with rounded scales in the throat; *nutlets* flattened, tubercled.

3. Sýmphytum.—*Calyx* deeply 5-cleft; *corolla* polysymmetric, bell-shaped, closed with 5 awl-shaped scales; *stamens* short, included.

4. Borágo.—*Calyx* deeply 5-cleft; *corolla* rotate, its throat closed with 5 short, erect, notched scales; *filaments* forked; *anthers* prominent, converging in a cone.

5. Anchúsa.—*Calyx* deeply 5-cleft; *corolla* salver-shaped, with a straight tube, its throat closed by prominent blunt scales; *stamens* included.

6. Lycópsis.—*Calyx* deeply 5-cleft; *corolla* oblique, funnel-shaped, with a bent tube; otherwise like *Anchúsa.*

7. Pulmonária.—*Calyx-tube* long, 5-cleft; *corolla* salver-shaped, polysymmetric, its throat naked; *stamens* included; *nutlets* smooth.

8. Pneumária.—*Calyx-tube* short, deeply 5-cleft; *corolla* funnel-shaped; *stamens* long, exserted; *nutlets* fleshy.

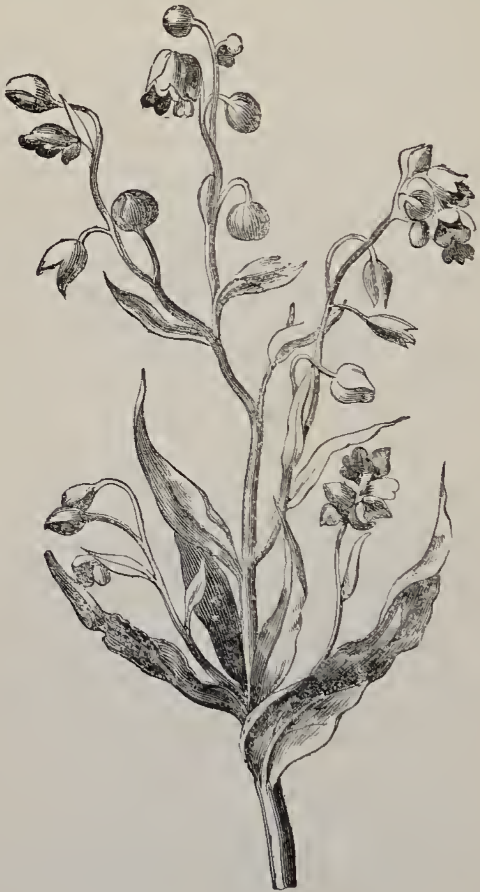
9. Myosótis.—*Calyx* 5-cleft; *corolla* salver-shaped, its lobes blunt, twisted when in bud, and its throat nearly closed by blunt scales; *nutlets* smooth.

10. Lithospérmum.—*Calyx* deeply 5-cleft; *corolla* funnel-shaped, its throat naked or with 5 minute scales; *stamens* included; *nutlets* stony.

11. Échium.—*Calyx* deeply 5-cleft; *corolla* monosymmetric, sub-campanulate, its throat naked; *stamens* very long, unequal in length, exserted.

1. Cynoglóssum (Hound's-tongue).—Coarse, hairy, herbaceous plants, with small *flowers* in forked, usually ebracteate cymes; *calyx* 5-cleft; *corolla* polysymmetric, funnel-shaped, its mouth closed by

prominent blunt scales; *stamens* included; *nutlets* covered with hooked bristles; *style* rigid, persistent.



CYNOGLOSSUM OFFICINÁLÉ (*Common Hound's-tongue*).

(Name from the Greek *glóssa*, a tongue, *cúnos*, of a dog, from the shape and roughness of the leaves.)

1. *C. officinálé* (Common Hound's-tongue).—A stout, herbaceous plant, 1—2 feet high, with large,

downy *leaves* with adpressed hairs, lurid red-purple *flowers*, and large, flattened *nutlets*, covered with barbed prickles, so as to stick to the wool of animals or the clothes of passers-by as closely as burs. The whole plant has a strong disagreeable smell, like that of mice.—Waste ground.—Fl. June, July. Biennial.

2. *C. germánicum* (Green-leaved Hound's-tongue). —A more slender plant with *leaves* green above, not downy, with few spreading hairs, and reddish *flowers*, changing to blue.—Shady places in the Midland and Eastern counties; rare.—Fl. May, July. Biennial.

*2. Aspérugo (Madwort), represented by one species, *A. procúmbens*, with prostrate, angular *stems*, thickly set with rigid, curved bristles, and few, small, blue *flowers*, solitary in the axils of the upper leaves, occurs rarely in waste ground, but is not indigenous. (Name from the Latin *asper*, rough.)—Fl. May—July. Annual.

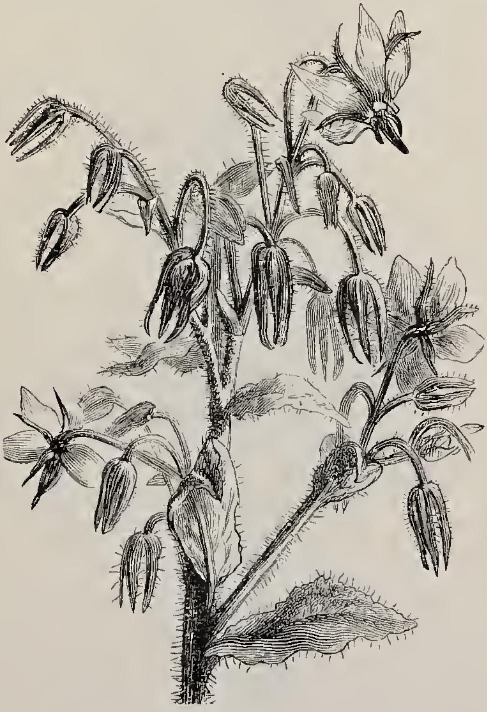
3. Sýmphytum (Comfrey).—Coarse, rough plants with enlarged *roots*; *cauline leaves* often decurrent; *flowers* in terminal cymes; *corolla* bell-shaped, dilated above the middle, with 5 short lobes, and the throat closed with 5 awl-shaped, fringed scales; *stamens* included; *nutlets* smooth. (Name from the Greek *súmphuo*, I unite, from its supposed healing qualities).

1. *S. officinálé* (Common Comfrey).—A large and handsome plant, 2—3 feet high, with branched, leafy *stems*, winged in the upper part; *leaves* elliptical, acute, decurrent; and purple, pink, or white *flowers* in 2-forked, drooping clusters.—Watery places and banks of rivers; common. Often introduced into gardens, from which it is very difficult to eradicate it when it has once established itself, owing to the brittleness of its fleshy roots, the least bit of which will grow.—Fl. May, June. Perennial.

2. *S. tuberósum* (Tuberous Comfrey).—A smaller and more slender plant with a scarcely winged *stem*, longer-stalked radical, and scarcely decurrent cauline *leaves*.—Damp woods in the north; rare.—Fl. June, July. Perennial.

SÝMPHYTUM OFFICINÁLÉ (*Common Comfrey*).

*4. Borágo (Borage) is represented by one species, *B. officinális*, about 2 feet high, with both *stems* and *leaves* thickly covered with stiff, whitish, bulbous bristles. The *flowers*, which are large, bright blue, and very handsome, grow in terminal, drooping clusters, and may readily be distinguished from any other plant in the Order by their prominent purple-black *anthers*. A variety occurs with white flowers.



BORÁGO OFFICINÁLIS (*Common Borage*).

—Waste places; not indigenous. The juice has the smell and flavour of cucumber, which is, therefore, often substituted for Borage in claret-cup.—Fl. June, July. Biennial.

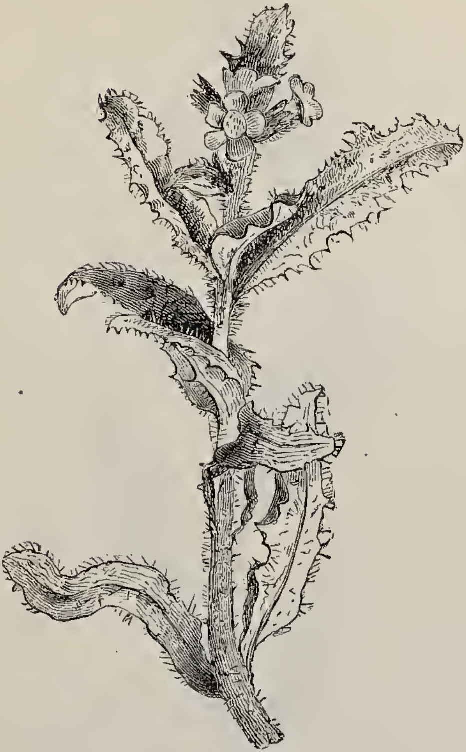
*5. ANCHÚSA (Alkanet). — Herbaceous, bristly plants with a deeply 5-cleft *calyx*, and a funnel-

or salver-shaped *corolla* with a straight tube, and its throat closed by prominent blunt scales. (Name from the Greek *anchousa*, paint, from the use of the root as a dye.)

1.* *A. officinális* (Common Alkanet).—A soft, hairy plant with an angular *stem ;* narrow, lanceolate *leaves ;* and forked one-sided cymes of violet *flowers ; calyx* longer than the funnel-shaped *corolla.*—An occasional escape from gardens.—Fl. June—July. Biennial.

ANCHÚSA SEMPERVÍRENS (*Evergreen Alkanet*).

2.* *A. sempervírens* (Evergreen Alkanet). — A stout, bristly plant with deep green, ovate *leaves,* and long-stalked, axillary, crowded clusters of rather large *flowers*, which are of an intense azure blue and have a short tube to the *corolla.*—Not generally considered a native; but not an uncommon hedge-plan in Devonshire.—Fl. May—August. Perennial.



LYCÓPSIS ARVÉNSIS (*Small Bugloss*).

6. LYCÓPSIS (Bugloss).—Differing from *Anchúsa* chiefly in having a bent tube and an oblique limb to the *corolla.* (Name in Greek signifying "a wolf's face," from some fancied resemblance in the flower.)

1. *L. arvénsis* (Small Bugloss).—The only British species; a branched, prickly plant, 6—18 in. high, with oblong, wavy *leaves*, and forked, curved clusters of small blue *flowers*.—Waste ground; common, especially near the sea.—Fl. June, July. Annual.

PULMONÁRIA OFFICINÁLIS (*Common Lungwort*).

7. Pulmonária (Lungwort).—Herbs with a creeping *rhizome;* radical and cauline *leaves;* terminal cymes of *flowers* with long, 5-cleft *calyx;* salver-shaped, polysymmetric *corolla* with naked throat; included *stamens;* and smooth *nutlets.* (Name from the Latin *pulmo,* the lungs, its spotted leaves being supposed, according to the old doctrine of "signatures," to indicate its value in lung-disease.)

1. *P. angustifólia* (Narrow-leaved Lungwort).—About a foot high; *leaves* narrow-lanceolate, the upper ones sessile, often spotted with pale green; *flowers* pink in bud and afterwards deep blue.—Woods in Dorsetshire, the Isle of Wight, and the New Forest. —Fl. February—June. Perennial.

2. *P. officinális* (Common Lungwort).—*Leaves* ovate, always spotted; *flowers* pale purple.—Woods; rare. Generally an escape from gardens.—Fl. April, May. Perennial.

8. Pneumária (Smooth Gromwell, Lightwort).—Herbs with radical and cauline *leaves,* and blue-purple *flowers* in terminal cymes; *calyx-tube* short, deeply 5-cleft; *corolla* funnel-shaped; *stamens* long, exserted; *nutlets* fleshy. (Name from the Greek *pneumón,* the lungs.)

1. *P maritima* (Seaside Smooth Gromwell).—The only British species, a singular plant about 18 in. high, with fleshy, glaucous *leaves,* without bristles, but sprinkled with hard dots, which are very evident in dried specimens; *flowers* blue-purple, crimson in bud. —Sea-shores in the north. When fresh the plant is said to have the flavour of oysters.—Fl. May, June. Perennial.

9. Myosótis (Mouse-ear, Scorpion-grass).—Herbs with stalked radical, and sessile cauline *leaves,* and terminal 1-sided clusters of small, generally blue

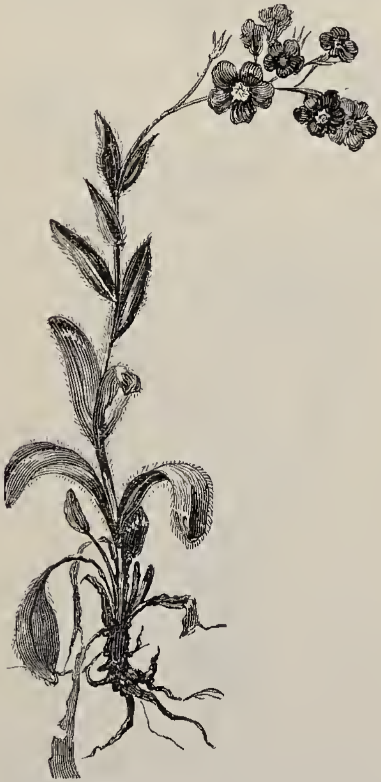
flowers ; *calyx* 5-cleft ; *corolla* salver-shaped, with blunt lobes, twisted in bud, and throat nearly closed by blunt scales ; *nutlets* smooth. (Name from the Greek, signifying a mouse's ear, from the shape of the often downy leaves.

1. *M. cespitósa* (Tufted Water Scorpion-grass).—A tufted, light green, rather shining plant with a short, not creeping *rhizome ; stem* much branched from the base with slender branches, downy with adpressed hairs ; blunt *leaves* ; and long, slender racemes of short-stalked, sky-blue *flowers*, $\frac{1}{6}$ in. across.—Watery places ; common.—Fl. May—August. Perennial.

2. *M. palústris* (Forget-me-not).—A light green, rather shining, almost glabrous plant, with few spreading or adpressed hairs, a creeping *rhizome* with runners ; blunt, apiculate *leaves*, the cauline ones sessile or decurrent ; and terminal, leafless, 1-sided clusters of bright blue *flowers*, nearly $\frac{1}{2}$ in. across, with a yellow eye, and a small, white scale at the base of each lobe of the corolla.—Watery places ; common. Few flowers have been more written about than the Forget-me-not, yet there is great disagreement among writers as to the plant to which the name properly belongs. It was once applied to the Ground-pine (*Ájuga Chamæpitys*) on account of its strong taste of turpentine : some appear to have had the Alkanet in view ; others, the Speedwell ; and others, again, some of the smaller and less brilliantly coloured species of *Myosótis*.—Fl. May—August. Perennial.

3. *M. répens* (Creeping Water Scorpion-grass).—*Rhizome* short with leafy runners above ground ; *stem* angular, slender, branched, with long, spreading hairs ; *leaves* acute ; *flowers* sky-blue, with a yellow-eye, $\frac{1}{3}$ in. across, in long, slender clusters with a few leaves at the base, and very slender, long *pedicels* bending downward in fruit.—Wet places ; common.—Fl. June—August. Perennial.

4. *M. alpéstris* (Mountain Forget-me-not).—A short, erect plant, with long, soft, spreading hairs; *radical leaves* on long, slender stalks, pointed; *flowers* deep bright blue, $\frac{1}{3}$ in. across, in short clusters, with short, thick *pedicels*, and flat, short-tubed *corollas*, sweet-scented in the evening.—Mountains in Yorkshire and Scotland; rare.—Fl. July, August. Perennial.



MYOSÓTIS ALPÉSTRIS (*Mountain Forget-me-not*).

5. *M. sylvática* (Wood Forget-me-not).—A taller, erect plant, without runners, with spreading hairs; *radical leaves* on short, broad stalks, blunt; *flowers*

bright blue, $\frac{1}{3}$ in. across, in clusters becoming very loose in fruit; *calyx* with hooked bristles.—Dry woods; rare.—Fl. May—September. Perennial.

6. *M. arvénsis* (Field Scorpion-grass).—A closely allied species, 6—18 in. high, roughish with spreading bristles; *radical leaves* stalked; *flowers* very small, $\frac{1}{6}$ in. across, usually concave, pale blue, on long, slender, spreading *pedicels; calyx* with hooked bristles.—Cultivated land and waste places; the commonest species of the genus.—Fl. June—August. Annual.

MYOSÓTIS VERSÍCOLOR (*Parti-coloured Scorpion-grass*).

7. *M. collína* (Early Field Scorpion-grass).—A slender, erect or prostrate plant, often only about 3 in.

high; *leaves* oblong, blunt; *flowers* minute, bright blue (never pink or yellow), on short *pedicels* in long, slender, leafless clusters, with a solitary flower some distance below them in the axil of the uppermost leaf; *calyx* with hooked bristles.—Dry banks; common. On its first appearance, in April, the flowers are buried among the leaves; but the stems finally lengthen into racemes, and as the season advances the whole plant dries up and disappears.—Fl. April—July. Annual.

8. *M. versícolor* (Parti-coloured Scorpion-grass).—A very distinct species, less than a foot high; *stem* leafy below, naked above; *leaves* sessile, linear-oblong, sub-acute; *flowers* very minute, in clusters, on long, leafless stalks, tightly coiled up, when in bud, in the scorpioid manner which gives these plants the name of *Scorpion-grass*, at first pale yellow, afterwards blue. —Fields and banks; common.—Fl. April—June. Annual.

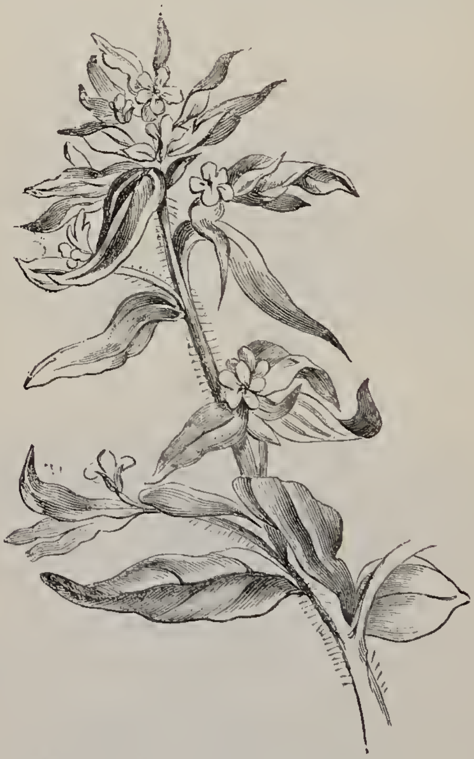
10. LITHOSPÉRMUM (Gromwell).—Herbs, sometimes shrubby, with *flowers* in leafy clusters; *calyx* deeply 5-cleft; *corolla* funnel-shaped, its throat naked, or with 5 minute scales; *stamens* included; *nutlets* stony. (Name from the Greek *lithos*, a stone, *sperma*, seed, from its hard nutlets.)

1. *L. purpúreo-cœrúleum* (Purple Gromwell), with prostrate, barren *stems*, and erect flowering ones, 1—2 feet high, with large, bright blue-purple *flowers*, occurs rarely in woods on chalky or limestone soil, chiefly in the south.—Fl. May—July. Perennial.

2. *L. officinálé* (Common Gromwell, or Grey Millet).—Distinguished by its erect *stems*, 1—3 feet high, much branched towards the summit, and generally growing 5 or 6 from the same root; oblong, acute, sessile *leaves*, bristly above, hairy beneath; small yellowish-white *flowers*, and, above all, by its highly polished pearl-grey, stony *nutlets*, which remain on

the dead, leafless shoots in autumn—Dry places; not unfrequent.—Fl. June—August. Perennial.

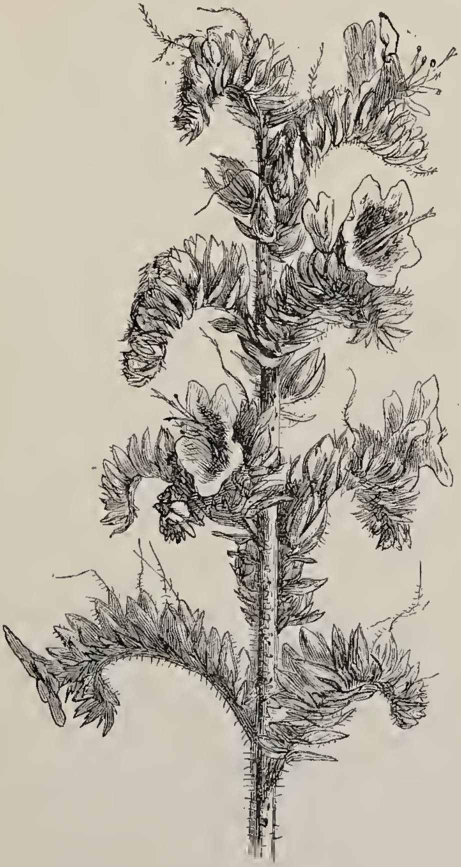
3. *L. arvénsé* (Corn Gromwell).—*Stem* about a foot high, solitary, erect, branched; *leaves* narrow, hairy; *flowers* small, cream-white; *calyx* lengthening when in fruit, and containing 3 or 4 brown, wrinkled *nutlets.*—Cornfields; common.—Fl. May—July. Annual.



LITHOSPÉRMUM OFFICINÁLÉ (*Common Gramwell, or Grey Millet*).

11. ÉCHIUM (Viper's Bugloss).—Usually large, rough herbs with their *flowers* in scorpioid clusters;

calyx deeply 5-cleft; *corolla* monosymmetric, subcampanulate, its throat naked; *stamens* very long,



ÉCHIUM VULGÁRÉ (*Common Viper's Bugloss*).

unequal in length, exserted. (Name from the Greek *echis*, a viper, against the bite of which it was formerly considered an antidote.)

1. *E. vulgáré* (Common Viper's Bugloss).—A handsome plant, 2—3 feet high, remarkable for its bristly, or almost prickly *stems* and *leaves*, and numerous curved, lateral spikes of *flowers*, which on their first opening are bright rose-coloured and finally of a brilliant blue.—Dry places; common. The roots are very long and tapering, and descend perpendicularly into the loose soil in which the plant usually grows. There is a white-flowered variety. The name Bugloss is of Greek origin, signifying *ox's tongue*, referring to the shape and roughness of the leaves.—Fl. June—August. Biennial.

2.* *E. plantagineum*, with narrower *leaves* and more spreading spikes of dark violet *flowers*, occurs in Cornwall and Jersey.—Fl. June—September. Biennial.

ORD. LIII. CONVOLVULÁCEÆ.—THE BINDWEED FAMILY.

An extensive and highly valuable family of plants, most of which are herbaceous climbers, with large and very beautiful *flowers*. They are most abundant within the Tropics. They have frequently a milky juice: their *leaves* are scattered and exstipulate; their *sepals* 5, inferior, imbricate, often very unequal, persistent; their *corolla* monosymmetric, hypogynous, plaited, gamopetalous, 5-toothed, deciduous; *stamens* 5, inserted on the base of the corolla-tube; *ovary* of 2—4 united carpels, few-seeded, surrounded below by a fleshy, ring-shaped *disk*; *style* single, 2—4-forked; *fruit* a 1—4-chambered capsule. As medicines they occupy an important station. The roots of *Vólvulus Scammónia*, a Syrian species, furnish scammony; jalap is prepared from a similar gum-resin which abounds in the roots of several species of *Exogónium*, beautiful Mexican climbers, with large, trumpet-shaped flowers; and *Batátas edúlis* is no less valuable as a food in tropical countries, its roots, known as sweet potatoes, abounding in starch and sugar, and being very nourishing. *Cúscuta* (Dodder) is a parasitic genus, with branched, climbing, thread-like stems, no leaves, and globular heads of small, wax-like flowers. The seeds germinate in the ground, and the young plants climb the stems of adjoining plants, sending out root-like suckers into them and then losing their connexion with the ground. One species found in Britain grows upon Flax, with the seeds of which it has probably been introduced; and others grow on Furzes, Heaths, Clovers, and other plants.

1. VÓLVULUS.—Leafy, twining plants with 2 large *bracts* enclosing the *calyx*.

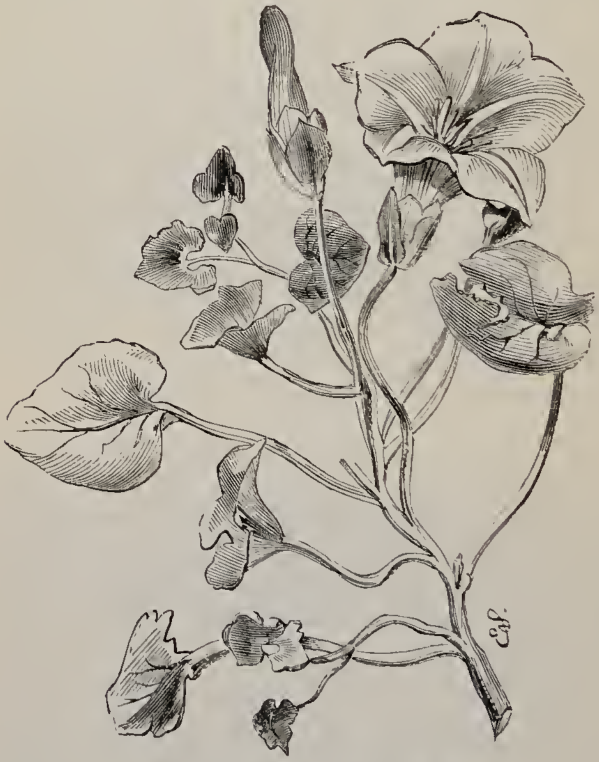
2. CONVÓLVULUS.—Leafy, twining plants with small *bracts* distant from the flower.

3. CÚSCUTA.—Leafless, twining parasites.

1. VÓLVULUS (Bindweed).—Slender, twining plants with milky juice; scattered *leaves*, often sagittate; *bracts* large, leafy, enclosing the *calyx; corolla* trumpet-shaped, 5-plaited, slightly 5-lobed; *capsule* 2-chambered below, 1-chambered above, 2-valved (Name, a diminutive from the Latin *volvo*, I twine.)

1. *V. sépium* (Great Bindweed).—A glabrous, twining plant with stout, fleshy, creeping *rhizome; leaves* arrow-shaped, with abrupt lobes; *bracts* large, heart-shaped, close to the flower and entirely enclosing it when in bud; *flowers* solitary, on square peduncles, large, pure white; *fruit* not often perfected.—Bushy places; common. A most mischievous weed in gardens, not only exhausting the soil with its roots, but strangling with its twining stems the plants which grow near. Its handsome flowers are among the largest which this country produces.—Fl. June—September. Perennial.

2. *V. Soldanélla* (Sea Bindweed).—A very beautiful species; *stems* not climbing, usually almost entirely buried beneath the sand; *leaves* fleshy, roundish or kidney-shaped; *bracts* large, ovate, close to the flower; *flowers* solitary, almost as large as those of the preceding species, pale rose-coloured, striped with red or yellow, on 4-sided, winged stalks.—Sandy sea-shores; frequent. The flowers generally expand in the morning and close before night.—Fl. June—August. Perennial.



VÓLVULUS SOLDANÉLLA (*Sea Bindweed*).

2. Convólvulus (Bindweed), differing mainly in having small *bracts* low down on the peduncle. (Name, a diminutive from the Latin *convólvo*, I entwine.)

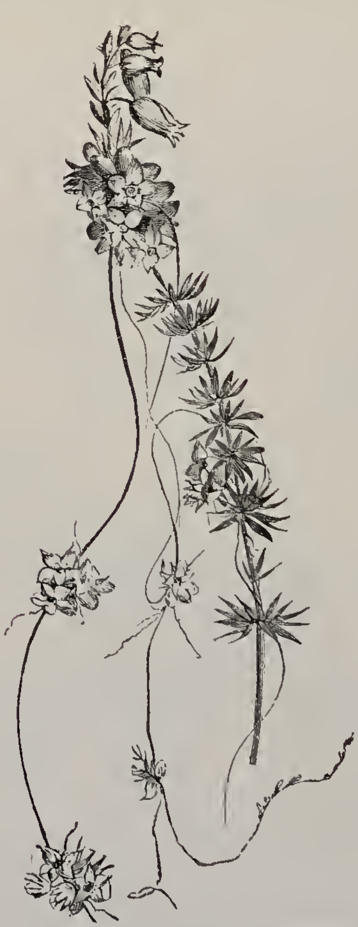
1. *C. arvénsis* (Field Bindweed).—A beautiful, though destructive twining plant; *leaves* arrow-shaped, with acute lobes; *bracts* 2, small, linear, distant from the flower; *flowers* 1—3 together, white or rose-coloured, with darker red plaits, handsome and fragrant, opening only in sunny weather.—A common weed in light soil, either trailing along the ground among short grass or climbing the stalks of corn or any other support.—Fl. June—September. Perennial.

3. Cúscuta (Dodder).—Slender, branched, twining, leafless parasites, with thread-like *stems*, generally reddish, and small *flowers* in compact globular heads; *calyx* 4—5-cleft; *corolla* bell-shaped, 4—5-cleft, generally with scales below the epipetalous *stamens; ovary* 2-chambered, 4-seeded; *capsule* bursting transversely; *seeds* almost without cotyledons. (Name of doubtful etymology.)

1. *C. europǽa* (Greater Dodder), with a *calyx* of blunt sepals, much shorter than the yellowish *corolla*, and the scales in the corolla-tube short, notched, and pressed to the sides of the tube, grows on Nettles, Thistles, Vetches, and other herbaceous plants.—Fl. July—September. Annual.

2. *C. Epíthymum* (Lesser Dodder), with a reddish *calyx* of acute sepals, shorter than the white *corolla*, the scales as long as the corolla-tube, fringed and converging, and the *stamens* exserted, grows on Furzes, Heaths, Thymes, and other shrubby plants, and is the commonest species. Soon after flowering the stems turn dark brown, and in winter disappear.—Fl. July—October. Annual.

3.* *C. Epilínum* (Flax Dodder), with green *stems*, whitish *flowers* in small clusters, acute *sepals* as long as the *corolla*, and adpressed fringed scales, is sometimes very destructive to Flax.—Fl. July, August. Annual.



CÚSCUTA EPÍTHYMUM (*Lesser Dodder*).

4.* *C. Trifólii* (Clover Dodder), with reddish-yellow *stems*; white *flowers*; lanceolate, red-tipped *sepals* as long as the *corolla*, and converging scales half as long as the corolla-tube; grows chiefly on Clover.—Fl. July—September. Annual.

ORD. LIV. SOLANÁCEÆ.—THE NIGHTSHADE FAMILY.

A large and highly important Order, containing about 1,000 species of herbaceous plants and shrubs, which inhabit most parts of the world except the coldest, and are most abundant within the Tropics. Their *leaves* are exstipulate and scattered, but occasionally appear, owing to adhesion, to spring in pairs; and the cymose *inflorescences* are similarly sometimes above the axils of the leaves. The *flowers* are polysymmetric and pentamerous, rarely 4-merous; *calyx* inferior, deeply cleft; *corolla* hypogynous, gamopetalous, plaited when in bud; *stamens* in one whorl, alternate with the petals; *anthers* bursting either by terminal pores or by slits down their inner surfaces; *ovary* 2-chambered; *style* 1; *stigma* simple; *fruit* a 2—4-chambered capsule or nuculane; *seeds* numerous. The prevailing property of the members of this Order is narcotic, and many are, in consequence, highly poisonous. In others, certain parts of the plant have poisonous properties, the rest being harmless, and some even containing a large quantity of nutritious matter. The genus *Solánum* is a very extensive one, comprising as many as 600 species. First among these in importance stands the Potato (*S. tuberósum*), a native of Chili, which was introduced into Spain between 1580 and 1585, and into Ireland by Thomas Herriott, who brought it from Virginia in 1586. It was first planted on Sir Walter Raleigh's estate at Youghal, co. Cork, and was cultivated for food in that country long before its value was known in England;

but John Gerard grew it in his garden in Holborn before 1597, the year in which his "Herbal" was published, in the frontispiece to which work he is represented holding a flowering branch of the potato. Its leaves and fruit are narcotic; but its tubers contain no noxious matter, abounding in an almost tasteless starch, on which account it is less liable to clog on the palate than any other vegetable food except bread. *S. Melóngena*, the Egg-plant, a common greenhouse plant, is remarkable for bearing a fruit of the size and colour of a pullet's egg; *S. Dulcamára*, the Woody Nightshade, or Bittersweet, a common English plant, with purple and yellow flowers and scarlet fruit, has narcotic leaves; and *S. nígrum*, a smaller species, common as a weed in England and most other countries, except the coldest, with white flowers and black fruit, is narcotic to a dangerous degree. *Átropa Belladónna*, a stout, herbaceous plant, with dingy purple, bell-shaped flowers, is the Deadly Nightshade, so-called from the poisonous nature of every part of the plant, especially the fruit, which is large, black, and shining, and of a very attractive appearance. It contains a substance known as *atropine*, which possesses the singular property of contracting the iris and thus dilating the pupil of the eye, on which account it is extensively used by oculists when operations are to be performed, and, it is said, by ladies to enhance their beauty, whence it derives its specific name. The Mandrake (*Mandrágora officinális*) was anciently thought to possess miraculous properties. It was said to shriek when taken from the ground, and to cause the instant death of anyone who heard its cries. The person who gathered it, therefore, always stopped his ears with cotton, and harnessed a dog to the root, so that, in his efforts to escape, he uprooted the plant, and instantly fell dead. The forked root was then trimmed so as to resemble the human form. Tobacco is the foliage of several species of *Nicotiána*, a violent poison when received into the stomach, though commonly employed in other ways without apparent ill effects. *Hyoscýamus níger*, the Henbane, a stout, herbaceous plant with sticky, fetid leaves, and cream-coloured flowers veined with purple, is a powerful narcotic, and in skilful hands scarcely less valuable than opium. *Datúra Stramónium*, the Thorn Apple, bearing large, white, trumpet-shaped flowers, and prickly capsules, is also a dangerous poison, though employed with good effect in several nervous and other disorders, especially asthma. *Phýsalis Alkekéngi*, the Winter Cherry, is remarkable for bearing a scarlet fruit enclosed in the enlarged calyx, which also turns scarlet, but, after exposure to autumn wet, decays, leaving the fruit hanging within a network of its veins. The genus *Cápsicum* affords Cayenne pepper, which is prepared by grinding the dried fruits; and Tomatoes are the fruit of the genus *Lycopérsicum.*

1. Solánum.—*Corolla* rotate, the segments spreading or reflexed; *anthers* opening by pores; *fruit* a 2-chambered nuculane.

*2. Lýcium. — *Corolla* funnel-shaped, segments spreading; *anthers* opening lengthwise; *fruit* a 2-chambered nuculane.

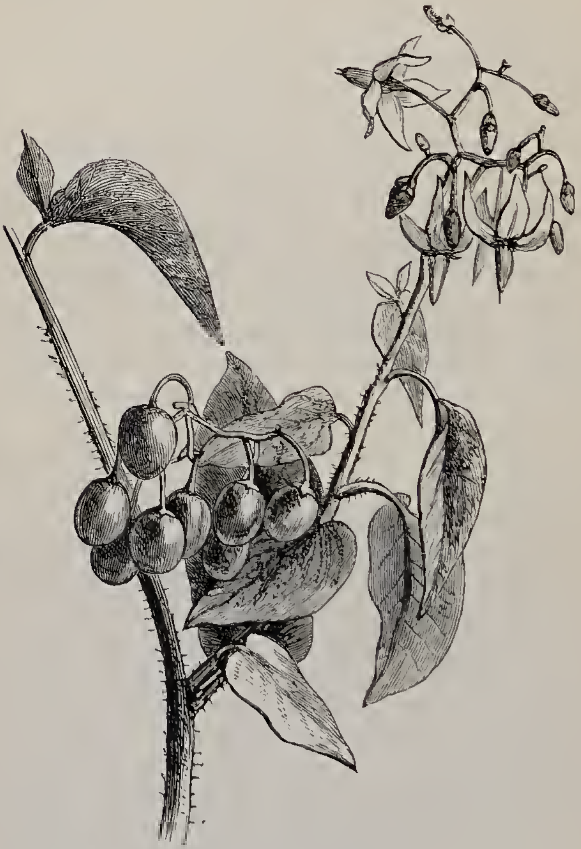
3. Átropa.—*Corolla* bell-shaped; *fruit* a 2-chambered nuculane.

*4. Datúra.—*Corolla* long, funnel-shaped, folded angularly; *fruit* a 4-valved capsule.

5. Hyoscýamus. — *Corolla* short, funnel-shaped, with unequal lobes; *capsule* opening transversely.

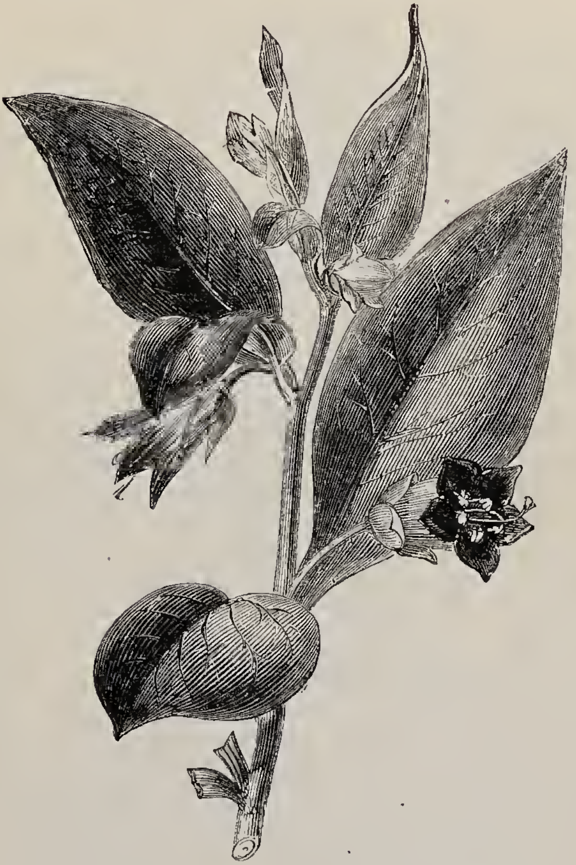
1. Solánum (Nightshade).—Herbs or shrubs with scattered or paired *leaves;* polysymmetric, purple or white *flowers;* rotate *corolla* with a short tube, and spreading or reflexed, valvate lobes; exserted, convergent *anthers*, opening by pores; and a 2—4-chambered, fleshy, many-seeded, berry-like *fruit.* (Name of doubtful origin.)

1. *S. Dulcamára* (Woody Nightshade, Bittersweet). — Frequently, though incorrectly, called *Deadly Nightshade;* well marked by its shrubby, clambering *stem* climbing among bushes to a height of 8 or 10 feet; *leaves* ovate, acute, cordate, hastate, or eared at the base; *flowers* in loose, drooping clusters, purple with 2 green spots at the base of each petal; *anthers*



SOLANUM DULCAMÁRA (*Woody Nightshade, Bittersweet*).

yellow, uniting in the form of a cone; *fruit* oval, scarlet, berry-like. — Hedges, and luxuriantly near water; common.—Fl. June, July. Perennial.



ÁTROPA BELLADÓNNA (*Deadly Nightshade, Dwale*).

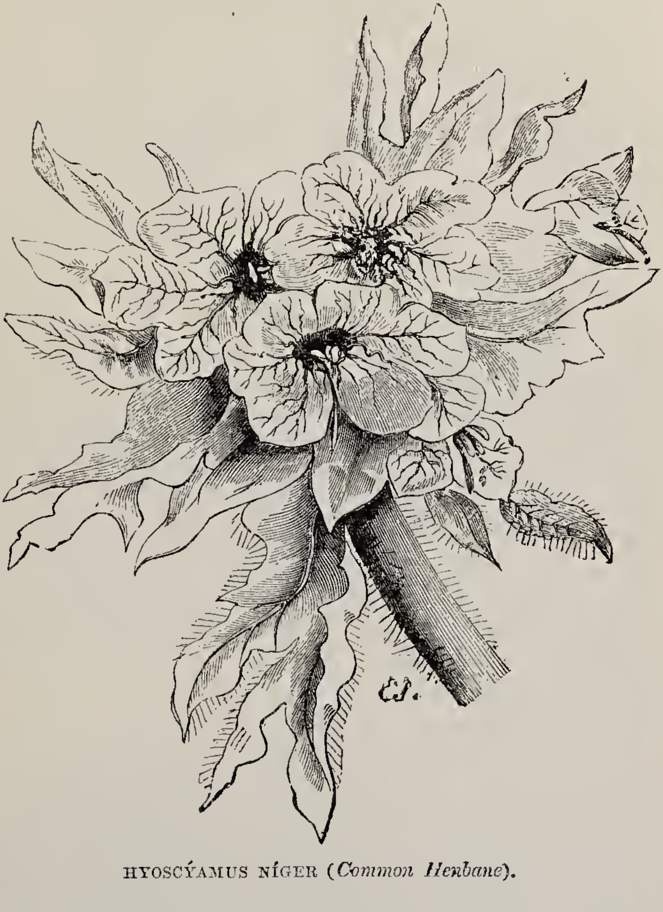
2. *S. nígrum* (Black Nightshade).—A branching, erect, herbaceous plant, generally less than a foot high; *leaves* stalked, ovate, wavy, bluntly toothed; *flowers* few, drooping, white, with yellow *anthers;*

fruit globular, generally black, but rarely yellow or red.—Waste ground; common.—Fl. July—October. Annual.

*2. Lýcium, represented by *L. bárbarum* (The Duke of Argyll's Tea-tree), an African shrub naturalized in many places, especially near the sea, straggling, with long, pendulous, and sometimes spinous branches; fleshy, glabrous, lanceolate *leaves;* purple, funnel-shaped *flowers* with a short corolla-tube, green throat, and black honey-guides; and red, berry-like fruit. Suggested as a substitute for tea.—Fl. June—August. Perennial.

3. Átropa (Deadly Nightshade), represented by one species, *A. Belladónna*, a stout, branched, erect, herbaceous plant, 3—4 feet high, with runners; *leaves* large, stalked, ovate, acute, generally in unequal pairs; *flowers* solitary, axillary, drooping, bell-shaped, lurid purple; *calyx* leafy, persistent; *fruit* globose, black, polished, resembling a cherry, but for the persistent calyx.—Old quarries, and among ruins, especially on chalk and limestone soils; not common. The most dangerous poisonous plant in Britain, its berries being fatally attractive to children. A strong emetic, a dose of magnesia, and to keep the patient from dozing are the best precautions in cases of poisoning by its berries, pending the arrival of medical aid. (Name from *Átropos*, one of the Fates, who was supposed to cut the thread of human destiny.)—Fl. June—August. Perennial.

*4. Datúra, represented by *D. Stramónium* (Thorn Apple), a coarse, strong-smelling plant, 1—2 feet high, with widely diverging 2—3-furcate branches; large, ovate, glabrous, sinuate-dentate *leaves;* large, erect, white *flowers* on short stalks in the forks of the branches; and a densely spinous, ovate, 4-valved



HYOSCÝAMUS NÍGER (*Common Henbane*).

capsule.—Waste places; rare. (Name of Arabic origin.)—Fl. June, July. Annual.

5. HYOSCÝAMUS (Henbane).—Strong-smelling, often sticky herbs; *calyx* bell-shaped, persistent;

corolla with a short tube and 5 unequal, blunt, spreading lobes; *stamens* lying on one side; *anthers* opening lengthwise; *ovary* 2-chambered; *capsule* opening transversely by a lid, many-seeded. (Name in Greek signifying *Hog's-bean.*)

1. *H. níger* (Common Henbane). — The only British species, an erect, branched, herbaceous plant, 1—3 feet high, with large, viscid, downy *leaves*, and funnel-shaped, cream-coloured *flowers*, generally with purple veins and a dark eye, arranged in a double row along the upper side of curving branches, succeeded by 2-chambered *capsules*, which are enclosed by the calyx, and open by lids which fall off when the *seeds* are ripe.—Waste places, on dry soil, especially near the sea; frequent. The whole plant has an exceedingly disagreeable smell of mice, and is dangerously narcotic, especially at the time when the seeds are ripening. An extract is used in medicine, and is often of great service, producing the effect of opium without the unpleasant symptoms which frequently follow the administration of that drug. The capsules and seeds of Henbane, smoked like tobacco, are a rustic remedy for the toothache; but convulsions and temporary insanity are said to be sometimes the consequences of their use. — Fl. May — August. Annual or Biennial.

ORD. LV. SCROPHULARÍNÆ.—FIGWORT FAMILY.

A large and important Order, containing nearly 2,000 species, of which some are shrubs, but the greater number are herbaceous, inhabiting all parts of the world, from the Arctic regions to the Tropics. Their *leaves* are generally simple, and their *flowers* monosymmetric; *calyx* 4—5-lobed, persistent; *corolla* often 2-lipped or personate; *stamens* usually 4, 2 long and 2 short (didynamous) sometimes 2 or 5;

ovary 2-chambered; *style* 1; *stigma* 2-lobed; *capsule* 2-chambered, 2—4-valved, or opening by pores. The general character of the species is acrid and bitter, and some have powerful medicinal properties. The powdered leaves of Foxglove (*Digitális purpúrea*) lower the pulse, and, if taken in large doses, are poisonous. *Euphrásia* (Eye-bright), the "Euphrasy" of Milton, makes a useful eye-water. Among foreign genera, *Gratíola* is said to be the active ingredient in the once famous gout medicine, "Eau médicinale." *Euphrásia, Bártsia, Pediculáris, Rhinánthus*, and *Melampýrum* are partly parasitic, their roots being generally attached to those of grasses, and their leaves small in proportion to their size and copious flowering and seed-production. The Foxgloves, Snapdragons, Toadflaxes, and Mulleins have showy and ornamental flowers, and, together with several species of *Verónica*, are garden favourites.

* *Stamens* 5.

1. Verbáscum.—*Corolla* rotate, with 5 slightly unequal lobes; *stamens* hairy.

** *Stamens 4, didynamous.*

2. Linária.—*Corolla* personate, spurred; *capsule* opening by pores.

3. Antirrhínum.—*Corolla* personate, swollen at the base; *capsule* opening by pores.

4. Scrophulária.—*Corolla* nearly globose, shortly 2-lipped; *capsule* 2-valved.

*5. Mímulus.—*Calyx* 5-toothed; *corolla* 2-lipped, gaping; *seeds* many.

6. Limosélla.—*Leaves* radical, linear; *corolla* short, bell-shaped, 5-cleft, nearly polysymmetric; *anthers* 1-chambered.

7. Sibthórpia.—*Leaves* round; *corolla* short, ro-

tate, 5-cleft, nearly polysymmetric; *anthers* 2-chambered.

8. Digitális.—*Calyx* in 5 deep, unequal segments; *corolla* irregularly bell-shaped, with 4—5 shallow lobes.

9. Euphrásia.—*Leaves* opposite; *calyx* 4-cleft; *corolla* 2-lipped, *upper lip* with 2 spreading lobes, *lower lip* in 3 nearly equal lobes; *seeds* many.

10. Bártsia.—*Leaves* opposite; *calyx* 4-cleft; *corolla* 2-lipped, *upper lip* arched, entire, *lower lip* with 3 reflexed lobes; *seeds* many.

11. Pediculáris.—*Leaves* scattered; *calyx* inflated, 4-toothed; *corolla* gaping, *lower lip* 3-lobed; *seeds* many.

12. Rhinánthus.—*Leaves* opposite; *calyx* inflated, 5-toothed; *corolla* as in *Pediculáris*; *seeds* flattened, winged.

13. Melampýrum.—*Leaves* opposite; *calyx* tubular, 4-toothed; *corolla* much as in *Pediculáris*; *seeds* 2—4, not winged.

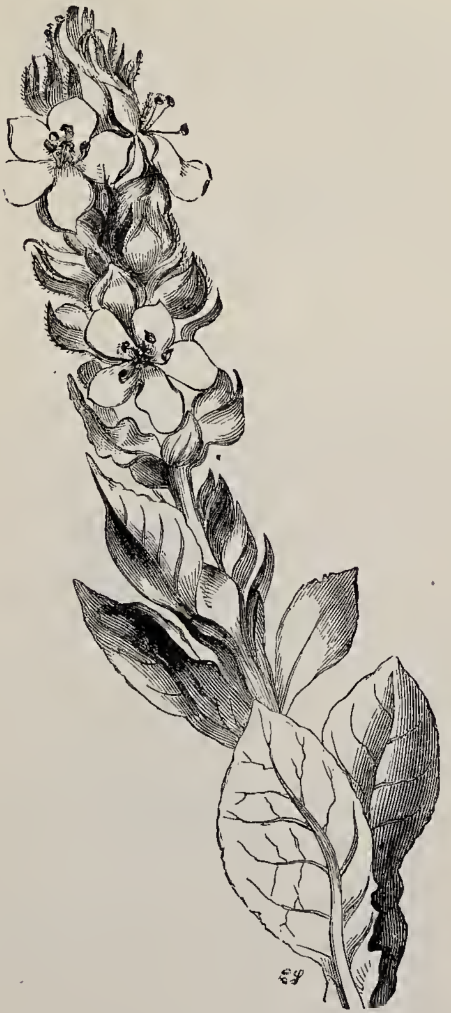
*** *Stamens* 2.

14. Verónica.—*Corolla* rotate, unequally 4-cleft, the lower lobe narrowest.

1. Verbáscum (Mullein).—Erect, woolly plants with scattered *leaves*, and nearly polysymmetric, 5-merous *flowers* in spikes; *corolla* rotate, with 5 slightly unequal lobes; *stamens* 5, hairy; *capsule* 2-valved, many-seeded. (Name a corruption of the Latin *Barbaseum*, meaning "bearded.")

1. *V. Thápsus* (Great Mullein).—A stout, herbaceous, unbranched plant, 2—5 feet high, remarkable for its large, flannel-like *leaves*, woolly on both sides and decurrent, and club-shaped spikes of yellow *flowers*. Two of the *stamens* are longer than the rest, and have white hairs on their filaments.—Roadsides; common.

This plant, together with Burdocks and Foxglove, is



VERBÁSCUM THÁPSUS (*Great Mullein*).

often introduced by painters into the foreground of landscapes.—Fl. June—August. Biennial.

2. *V. pulveruléntum* (Hoary Mullein).—*Stem* 2—3 feet high, round, mealy; *leaves* broad, with stellate hairs on both sides, not decurrent; *flowers* smaller, bright yellow, in panicles; *stamens* nearly equal, scarlet, with white hairs.—Norfolk and Suffolk.—Fl. July. Biennial.

3. *V. Lychnítis* (White Mullein).—A similar species, with angular *stem*; *leaves* nearly smooth above; and small, cream-coloured or white *flowers*.—Chiefly on a chalky soil; rare.—Fl. June—August. Biennial.

4. *V. nígrum* (Dark Mullein).—A handsome plant, not so stout or so tall as *V. Thápsus*, and of a darker hue; *stem* angular; *leaves* stalked, oblong, cordate, with stellate down, especially below; *flowers* very numerous, bright yellow, in dense tufts on a long, crowded spike; *stamens* covered with purple hairs.—Hedges and roadsides; local.—Fl. June—October. Biennial.

Several hybrids between the above four species occur.

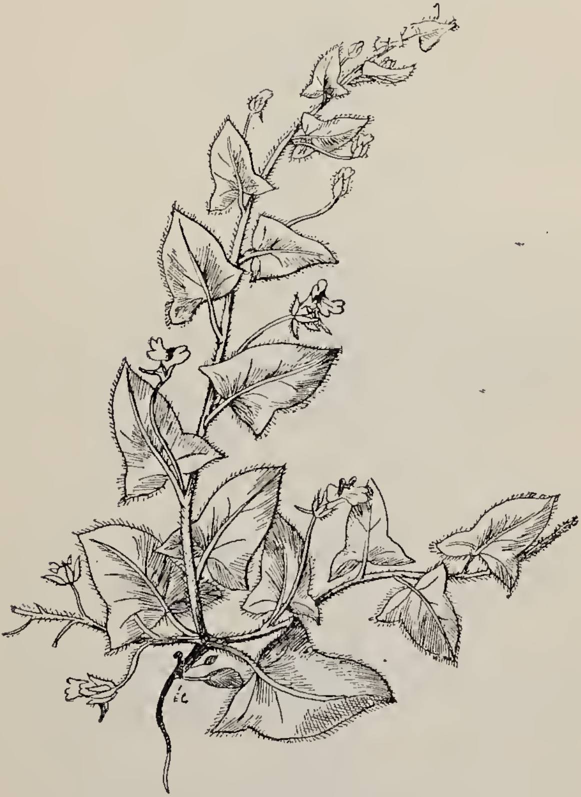
5. *V. virgátum* (Primrose-leaved Mullein).—A stout species, 3—4 feet high; *leaves* doubly serrate, with few glandular hairs, the upper ones slightly decurrent; *flowers* yellow, in a panicle, crowded; *stamens* with purple hairs.—Gravelly banks; rare.—Fl August. Biennial.

6. *V. Blattária* (Moth-Mullein).—A tall, slender plant, with smooth, shining, oblong, crenate *leaves*, the lower ones often lobed and embracing the stem, and with large, handsome, yellow or cream-coloured *flowers* in loose tufts on a long, interrupted spike; *stamens* with purple hairs.—Gravelly places; rare, except in the south-west.—Fl. July, August. Biennial.

2. Linária (Toad-flax).—Mostly herbs, with bracteate *flowers*, often in spikes or racemes; *corolla* per-

sonate, spurred; *stamens* 4, didynamous; *capsule* opening by pores. (Name from the Latin *linum*, flax, which some species resemble in their leaves.)

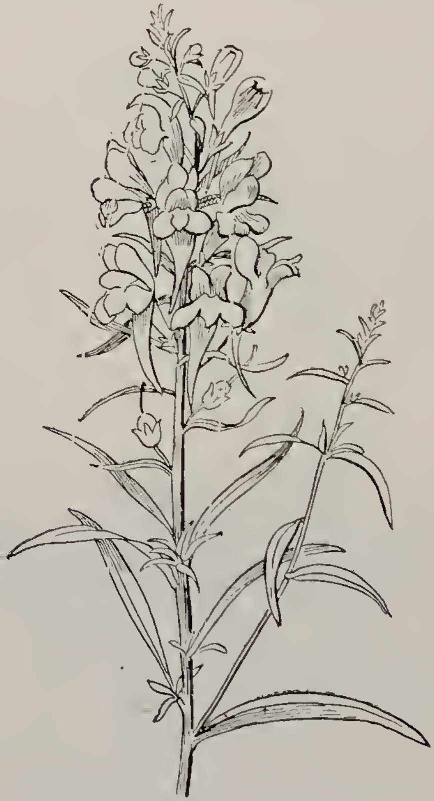
1.* *L. Cymbaláría* (Ivy-leaved Toad-flax, Mother-of-thousands).—Not a native species, but quite naturalised, growing freely from seed besides extending widely by means of its long, rooting *stems; leaves* smooth, 5-lobed, cordate, rather fleshy, purple on the under surface; *flowers* small, solitary, lilac.—On old garden



LINÁRIA ELÁTINA (*Sharp-pointed Fluellen*).

walls; common.—Fl. nearly all the year round. Perennial.

2. *L. Elátina* (Sharp-pointed Fluellen).—A small, prostrate plant, with downy *stem* and *leaves*, the latter hastate; *flowers* small, solitary, axillary, on long, slender *peduncles; corolla* with upper lip purple, lower yellow, the spur straight.—Cornfields; frequent.—Fl. July—October. Annual.



LINÁRIA VULGÁRIS (*Yellow Toad-flax*).

3. *L. spúria* (Round-leaved Toad-flax, Male Fluel-

len).—Resembling the last so closely that it might be mistaken for a luxuriant specimen of it; but with roundish-ovate *leaves* and rather larger *flowers*, with the spur bent up at a right angle to the *corolla*.—It grows in similar situations to, and sometimes with, *L. Elátina*, but is less common.—Fl. July—October. Annual.

4. *L. rḗpens* (Pale blue Toad-flax).—A slender, erect plant, about a foot high, with glaucous, linear *leaves*, and pretty pale lavender, purple-veined *flowers* in a spike-like terminal raceme.—Calcareous soils; rare.—Fl. July—September. Perennial.

5. *L. vulgáris* (Yellow Toad-flax).—An erect, herbaceous plant, 1—2 feet high, with numerous, crowded, linear, acute *leaves*, glabrous, and sometimes glaucous; and dense, spike-like, terminal racemes of large, yellow *flowers*.—Hedges; very common. The variety known as *Peloria*, with a polysymmetric, 5-spurred corolla, is rare.—Fl. June—October. Perennial.

6. *L. viscida* (Least Toad-flax).—A small, erect plant, less than a foot high, sometimes branched, with scattered, linear, blunt, downy, viscid leaves, and small, solitary, axillary, short-spurred, pale lilac *flowers*.—Cornfields on dry soil; frequent.—Fl. May—October. Annual.

Several other species occur on ballast heaps near the sea, or as garden escapes, but have no claim to be considered natives.

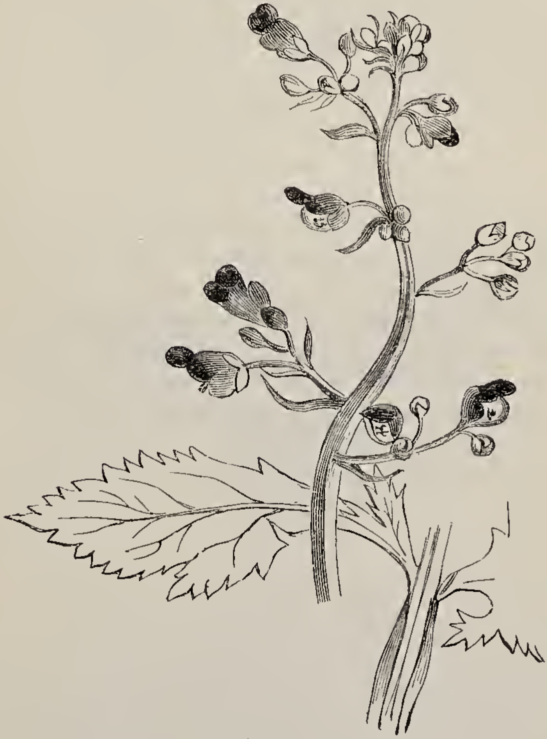
3. ANTIRRHÍNUM (Snapdragon).—A genus of herbs differing from *Linária* mainly in having a pouch-like swelling, instead of a spur, at the base of the *corolla*. (Name from the Greek *anti*, against, *rhis*, *rhinos*, the nose, from the mask-like appearance of the flowers.)

1.* *A május* (Great Snapdragon).—A stout, handsome plant, with numerous leafy *stems*; *leaves* lanceolate; *flowers* large, personate, pouched, crimson, pink or white, in many-flowered, dense, bracteate, spike-like, terminal racemes; *sepals* ovate, blunt, much shorter than the corolla.—In limestone quarries and chalk-pits, and on old walls; common, but not indigenous. In gardens varieties occur with many beautiful colours and veinings. Children derive much amusement from pinching the flowers between the finger and thumb, when the palate opens, as if in

ANTIRRHÍNUM ORÓNTÍUM (*Lesser Snapdragon*).

imitation of the fabulous monster from which it derives its name.—Fl. July—September. Perennial.

2. *A. Oróntium* (Lesser Snapdragon).—A much smaller and more slender plant, generally less than a foot high, with linear *leaves*, and a few, small, axillary, rose-coloured *flowers* with linear *sepals* much longer than the corolla.—Cornfields in the south; not common.—Fl. July—September. Annual.



SCROPHULÁRIA AQUÁTICA (*Water Figwort*).

4. SCROPHULÁRIA (Figwort). — Strong-smelling,

stout herbs, with *leaves* mostly opposite, and *flowers* in panicles; *corolla* nearly globose, shortly 2-lipped; *stamens* 4, or with a staminode; *capsule* 2-valved. (Name from its former use in the treatment of scrofula.)

1. *S. aquática* (Water Figwort).—A tall, herbaceous plant, 2—5 feet high, with a square *stem* with the angles winged; *leaves* smooth, oblong, cordate, blunt, crenate-serrate; *flowers* almost globular, chocolate-brown, in close, many-flowered panicles, with linear, blunt *bracts.*—Sides of streams and ditches; common. The stems, though hollow and succulent when dead, become rigid and prove very troublesome to anglers, owing to their lines becoming entangled in the withered capsules. — Fl. July—September. Perennial.

2. *S. umbrósa* (Shade Figwort).—Resembling the last, but with sharply serrate, acute *leaves*; and *flowers* in loose, few-flowered panicles, with leaf-like, lanceolate, acute *bracts.*—Wet places; uncommon. — Fl. August, September. Perennial.

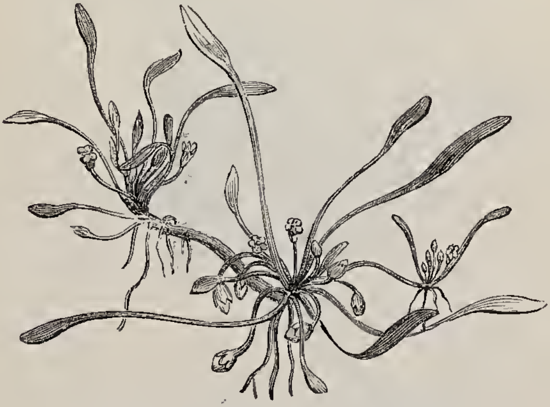
3. *S. nodósa* (Knotted Figwort).—Another similar, but smaller species, with a thick, fleshy, knotted *rhizome; stem* 2—3 feet high, square, with blunt angles; *leaves* smooth, ovate, acute, doubly and acutely serrate; and *flowers* greenish-brown, in loose panicles, with small, lanceolate, acute *bracts.* —Moist bushy places; common.—Fl. June, July. Perennial.

4. *S. Scorodónia* (Balm-leaved Figwort), with downy, wrinkled, crenate *leaves* and leaf-like *bracts*, is found only in Cornwall, Devon, Ireland, and the Channel Islands.—Fl. July, August. Perennial.

5.* *S. vernális* (Yellow Figwort).—A very distinct plant, about 2 feet high, with slightly 4-angled *stem;* broad, crenate, pale green *leaves* and bright yellow *flowers.* — Waste places; local. Appearing early in spring, and resembling a *Calceolaria*, this is the most ornamental British species.—Fl. April—June. Perennial.

*5. Mímulus (Monkey-flower).—Herbs with square *stems*, opposite *leaves*, and conspicuous, solitary, axillary *flowers* ; *calyx* 5-cleft, 5-angled ; *corolla* 2-lipped, gaping, the upper lip 2-lobed and reflexed ; *seeds* many. (Name from the Greek *mimo*, an ape, from the form of the flower.)

1.* *M. lúteus* (Yellow Monkey-flower).—A pretty North American plant, with hollow creeping *stems*, ovate, veined *leaves*, and large, yellow, funnel-shaped *flowers*, which has escaped from cultivation and become naturalised by the sides of many streams. Some of its cultivated varieties have the flowers blotched with brown or red.—Fl. June—September. Perennial.

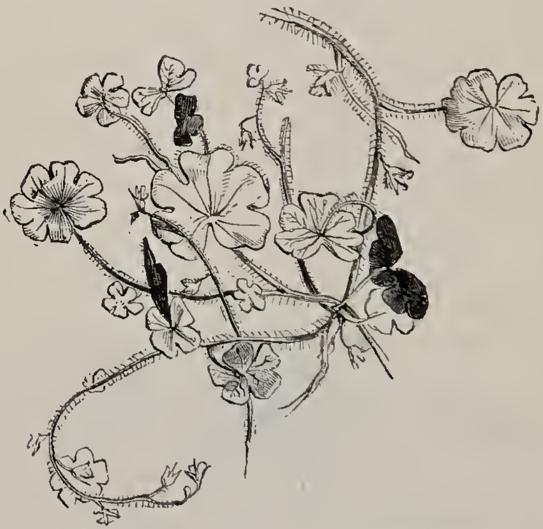


LIMOSÉLLA AQUÁTICA (*Common Mudwort*).

6. Limosélla (Mudwort).—Small, tufted, creeping, glabrous, aquatic plants, with radical, linear

leaves, and minute, solitary, axillary *flowers ; corolla* short, bell-shaped, 5-cleft, nearly polysymmetric; *stamens* 4, with 1-chambered *anthers.* (Name from the Latin *limus*, mud, from the character of the places in which the plant grows.)

1. *L. aquática* (Common Mudwort).—The only British species, a small plant, throwing up from the roots a number of smooth, spathulate *leaves* on long stalks, and minute, pale pink or white *flowers* on shorter stalks.—Watery places ; not common.—Fl. July—September. Annual.



SIBTHÓRPIA EUROPǼA (*Cornish Money-wort*).

7. SIBTHÓRPIA (Cornish Money-wort).—Slender, creeping, hairy plants, with rounded, lobed, stalked *leaves*, and small, solitary, axillary *flowers ; calyx* in 5 deep, spreading segments ; *corolla* short, rotate, 5-

cleft, nearly polysymmetric; *anthers* 2-chambered; *capsule* nearly round, flattened at the top. (Name in honour of Dr. Humphrey Sibthorp, Professor of Botany at Oxford from 1747 to 1783.)

DIGITÁLIS PURPÚREA (*Purple Foxglove*).

1. *S. europæa* (Cornish Money-wort).—The only

British species, an elegant little plant, with slender, thread-like *stems* creeping along the ground in tangled masses; small, round, notched, downy *leaves* of a delicate green; and very minute, pale pink and yellow *flowers.*—Banks of springs and rivulets in Cornwall, and occasionally in other southern counties. In habit it approaches *Hydrocótylé vulgáris* (Marsh Penny-wort), but it is smaller and downy and its leaves are notched. Fl. June—October. Perennial.

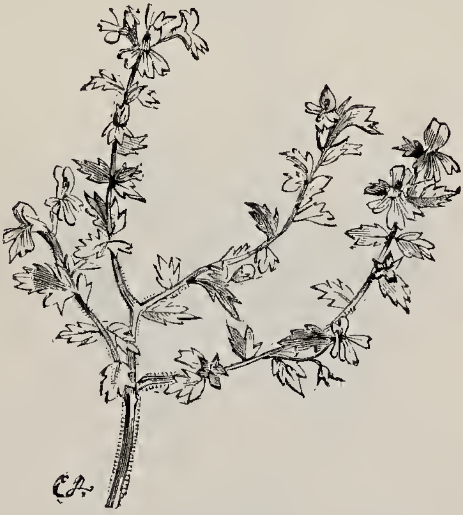
8. Digitális (Foxglove).—Tall plants with radical and cauline *leaves*, and large, monosymmetric, bell-shaped *flowers* in a long, terminal raceme; *calyx* deeply and unequally 5-lobed: *corolla* slightly 4—5-notched, hairy inside; *capsule* ovate. (Name from the Latin *digitus*, a finger, from the glove-like shape of the flower.)

1. *D. purpúrea* (Purple Foxglove).—The only British species, a stately plant, 2—6 feet high, with large, wrinkled, downy *leaves*, and a tall, slightly branched, tapering raceme of numerous handsome, deep rose-coloured, bell-shaped *flowers*, which droop as they expand. On the inside the corolla is beautifully spotted; and it occasionally occurs of a pure white.—Woods; common; but not on limestone. The name *Foxglove* is a corruption of *folk's-glove*; that is, *Fairies' glove*. The leaves yield a valuable medicine, which is, however, poisonous in large doses.—Fl. June—September. Biennial.

9. Euphrásia (Eye-bright). — Partially parasitic plants with opposite cut *leaves*, and *flowers* in a bracteate spike; *calyx* 4-cleft; *corolla* 2-lipped, the *upper lip* with 2 spreading lobes; the *lower lip* in 3 nearly equal lobes; *anthers* spurred at the base; *capsule* flattened, blunt, or notched; *seeds* numerous, ribbed.

(Name from the Greek *euphrásano,* I clear, in allusion to its use as an eye-lotion.)

1. *E. officinális* (Common Eye-bright).—An elegant little plant, 2—6 in. high, with deeply cut *leaves,* and numerous white or lilac *flowers* veined with purple, and with the middle lobe of the lower lip yellow.—It is common in pastures; but it is so variable that botanists distinguish a number of forms differing in the bracts, size of flowers, capsules, and seeds. On the mountains and near the sea the stem is scarcely branched, and the leaves are fleshy; but in rich soil it assumes the habit of a minute shrub. An infusion of this plant makes a useful eye-lotion.—Fl. May—September. Annual.

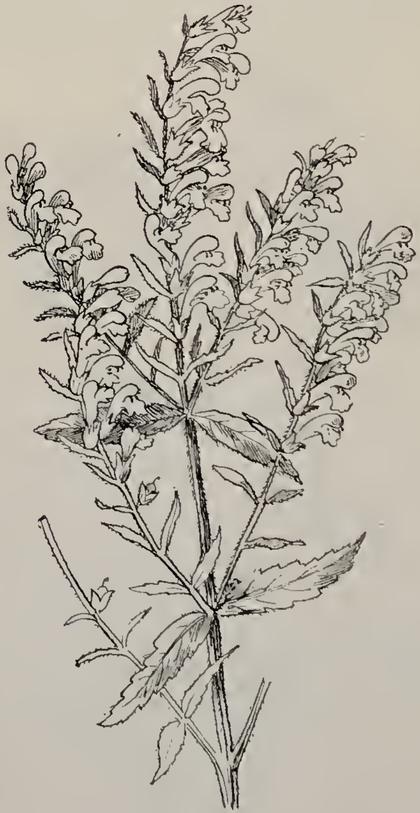


EUPHRÁSIA OFFICINÁLIS (*Common Eye-bright*).

10. BÁRTSIA.—Partially parasitic plants with opposite *leaves,* and *flowers* in branched spikes with leafy *bracts; calyx* 4-cleft; *corolla* 2-lipped, the *upper lip*

arched, entire, or notched, not spreading, the *lower lip* with 3 reflexed lobes; *capsule* flattened, blunt; *seeds* numerous, angular. (Name in honour of John Bartsch, a Prussian botanist.)

1. *B. Odontítes* (Red Bartsia).—A much-branched, erect, herbaceous plant, 6—12 in. high, with linear-lanceolate, dingy, reddish-green *leaves*, irregularly toothed, and numerous one-sided spikes of small, pink



BÁRTSIA ODONTÍTES (*Red Bartsia*).

flowers. While flowering the spikes usually droop at their ends.—Cornfields and waste places; common.—Fl. June—September. Annual.

2. *B. viscósa* (Yellow Viscid Bartsia).—An erect, clammy plant with sessile, ovate-lanceolate, deeply serrated *leaves*, the *lower* opposite, the *upper* scattered; and axillary yellow *flowers.*—In the south and west; rare. Somewhat resembling the Yellow-rattle (*Rhinánthus Crísta-gálli*), but at once distinguished by its clamminess. It looks very different in Sussex, where it is less than a foot high and unbranched, from what it does at the Lizard, where it is more than twice as tall and much branched.—Fl. June—October. Annual.

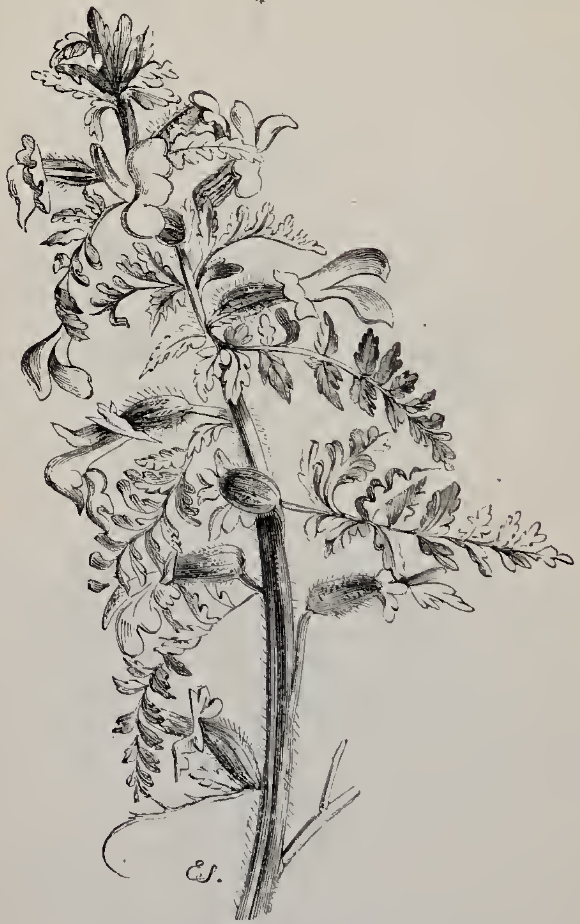
3. *B. alpína* (Alpine Bartsia), a low, unbranched species, with opposite, ovate *leaves*, and dull purple-blue *flowers* in a short, leafy spike. — Mountain pastures in the north; rare.—Fl. June—August. Perennial.

11. PEDICULÁRIS (Red-rattle).—Partially parasitic plants, with scattered *leaves*, and *flowers* generally red, in bracteate spikes or racemes; *calyx* inflated, somewhat leafy, unequally 5-toothed; *corolla* gaping, *upper lip* arched, flattened vertically, *lower lip* flat, 3-lobed; *capsule* flattened, oblique; *seeds* angular. (Name from the Latin *pedículus*, a louse, the plant being supposed to produce lice in sheep.)

1. *P. palústris* (Marsh Red-rattle).—An erect, branched, herbaceous plant, 6—18 in. high, nearly glabrous, with reddish *branches; leaves* deeply pinnately cut; *flowers* large and crimson, in a leafy raceme; *calyx* downy.—Marshes and bogs; common. It is often a conspicuous plant, overtopping the surrounding herbage.—Fl. May—September. Annual.

2. *P. sylvática* (Dwarf Red-rattle).—Distinguished from the last by its humbler growth, being prostrate

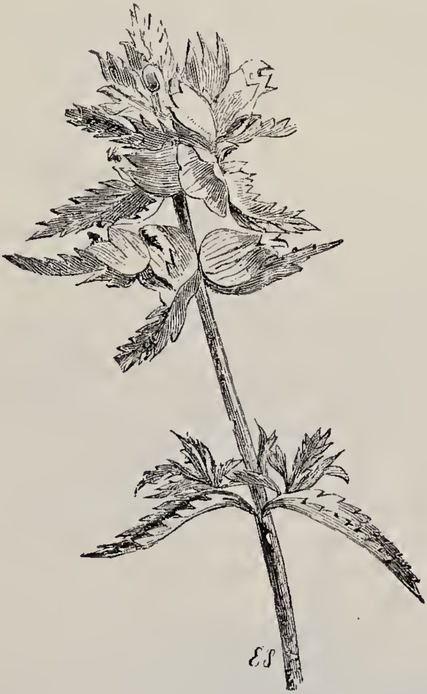
and only branched at the base, and by its rose-pink



PEDICULÁRIS PALÚSTRIS (*Marsh Red-rattle*)

flowers with a smooth *calyx*.—Damp heaths ; common. —Fl. April, August. Perennial.

12. Rhinánthus (Yellow-rattle).—Partially parasitic plants, with opposite, serrate *leaves*, and yellow *flowers* spotted with violet in one-sided spikes with toothed *bracts; seeds* flattened, winged; otherwise much as in *Pediculáris*. (Name from the Greek *rhis, rhinos*, the nose, *anthos*, a flower, from its shape.)



RHINÁNTHUS CRÍSTA-GÁLLI (*Cock's-comb, Yellow-rattle*).

1. *R. Crísta-gálli* (Yellow-rattle, Cock's-comb).—An erect, somewhat rigid plant, 12—18 in. high, seldom branched; *leaves* oblong-lanceolate, serrate; *flowers* yellow, in a loose spike, with green, ovate, deeply serrate *bracts*, and conspicuous, pale, inflated *calyces*.—Pastures; common. The rattling of the

ripe seeds in the capsule is a sign in Sweden that the hay is ready to cut; but in England hay-making begins when the plant is in full flower.—Fl. June. Annual.

2. *R. májor* (Large Yellow-rattle), a taller, much-branched species, has its *flowers* in crowded spikes, and a yellowish *bract*, ending in a fine green point, below each flower.—Cultivated fields; local.—Fl. July, August. Annual.

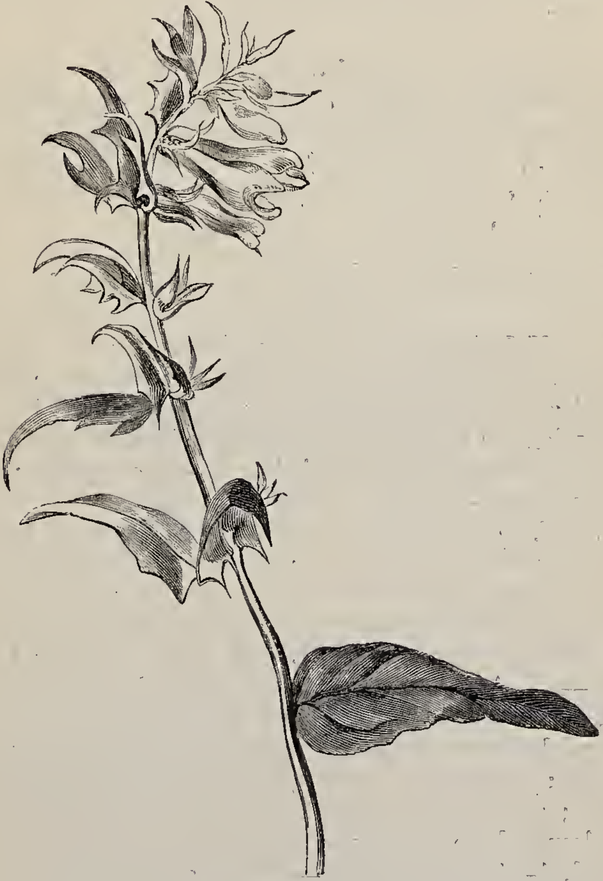
13. MELAMPÝRUM (Cow-wheat).—Partially parasitic plants with opposite *leaves; calyx* tubular, with 4 narrow teeth; *corolla* much as in *Pediculáris*, but with the sides of the upper lip reflexed; seeds 2—4, not winged. (Name from the Greek *melas*, black, *puros*, wheat, the seeds being said to make flour black when ground and mixed with it.)

1. *M. cristátum* (Crested Cow-wheat).—A handsome plant, about a foot high, with linear-lanceolate, entire *leaves* and yellow *flowers* tipped with purple, in dense, 4-sided spikes, with cordate, toothed, ovate *bracts* rose-coloured at the base, the lower ones recurved.—Woods in the eastern counties; rare.—Fl. September, October. Annual.

2. *M. arvénsé* (Purple Cow-wheat).—Also a handsome species, taller, with rosy *flowers* with a yellow throat and deep red lips, in loose spikes with ovate-lanceolate, pinnatifid, rose-red *bracts.*—Cornfields in the south-eastern counties; very rare.—Fl. July, August. Annual.

3. *M. praténsé* (Common Yellow Cow-wheat).—A slender plant, about a foot high, with opposite pairs of straggling branches below; *leaves* in distant pairs, lanceolate, smooth; *flowers* axillary, in distant pairs, all turning one way; *corolla* 4 times as long as the calyx, pale yellow, closed, *lower lip* longer than the upper.—Woods; common. According to Linnæus,

cows are fond of it, and the best and yellowest butter is made where it abounds; but the name *praténsé* (growing in meadows) is inappropriate, as it is rarely



MELAMPÝRUM PRATÉNSÉ (*Common Yellow Cow-wheat*).

found in such situations.—Fl. June—September, Annual.

4. *M. sylváticum* (Sub-alpine Yellow Cow-wheat),

differing from the last in having sub-erect, deep yellow *flowers* with the *corolla* only twice as long as the calyx and with its *lips* open and equal, occurs rarely in mountainous woods in the north.—Fl. July, August. Annual.

14. VERÓNICA (Speedwell).—Herbs or shrubs, with *flowers* usually blue; *corolla* rotate, unequally 4-cleft, the lower lobe narrowest; *stamens* 2, exserted. (Name of doubtful origin, perhaps a variant of *Betónica*, or perhaps a mediæval Latin word corrupted from the Greek *Beroníké.*)

**Annual; prostrate; flowers solitary, axillary; bracts scattered.*

1. *V. hederæfólia* (Ivy-leaved Speedwell).—*Leaves* stalked, 5—7-lobed, cordate, bearing in the axil of each leaf a pale blue *flower*, the stalk of which is bent back when in fruit; *sepals* cordate, ciliate; *capsule* of 2, much swollen, 2-seeded lobes.—A common weed everywhere.—Fl. March—August. Annual.

2. *V. políta* (Grey Field Speedwell).—*Leaves* stalked, irregularly serrate; *flowers* bright blue, ⅓ in. across, on stalks longer than the leaves; *sepals* broadly ovate, sub-acute; *capsule* of 2, turgid, generally hairy, 8—12-seeded lobes.—Fields and waste places; common.—Fl. April—September. Annual.

3. *V. agréstis* (Green Field Speedwell).—*Stems* several, long, prostrate; *leaves* stalked, cordate, regularly serrate; *flowers* ⅙ in. across, on stalks shorter than the leaves; *sepals* linear-oblong, blunt; *corolla* pale blue, the lower lobe white; *capsule* of 2, turgid, hairy, keeled, 4—6-seeded lobes.—Fields and waste places; common.—Fl. April—September. Annual.

4.* *V. Tournefórtii* (Tournefort's Speedwell).—A stouter, prostrate, hairy species, with shortly-stalked, cordate, obtuse, coarsely serrate *leaves*; large, bright blue *flowers* ½ in. across, on stalks longer than the leaves ; *sepals* lanceolate, ciliate ; *capsules* of 2, diverging, sharply-keeled, hairy, 5—8-seeded lobes.—Cultivated ground ; introduced about 1826, but now general. Fl. April—September. Annual.

** *Flowers in terminal racemes ; corolla-tube very short.*

5. *V. triphýllos* (Finger-leaved Speedwell), distinguished by its erect, branched *stem*, 4—8 in. high ; palmately 3—7-lobed *leaves* ; and dark blue *flowers* in a loose, few-flowered raceme.—Sandy fields in Yorkshire, Norfolk, and Suffolk ; rare.—Fl. April—June. Annual.

6. *V. vérna* (Vernal Speedwell).—An erect, hairy, leafy little plant, 2—4 in. high ; with pinnatifid *leaves* and numerous minute, pale blue *flowers.*—Sandy places, Norfolk and Suffolk ; rare.—Fl. May, June. Annual.

7. *V. arvénsis* (Wall Speedwell).—A slightly larger, downy plant, 4—18 in. high, often covered with dust, with two lines of hairs along its branches ; *leaves* slightly stalked, ovate-cordate, crenate ; *flowers* inconspicuous, pale blue, many, but almost concealed among the crowded upper leaves or *bracts.*—Walls and dry places ; abundant.—Fl. April—October. Annual.

8. *V. serpyllifólia* (Thyme-leaved Speedwell).—A small plant, with prostrate or slightly ascending, downy *stems* ; ovate or elliptic, slightly crenate, blunt, rather leathery *leaves* ; and several many-flowered racemes of very light blue flowers, $\frac{1}{4}$ in. across, striped with dark blue veins ; *capsules* inversely heart-shaped, with a long, persistent *style.*—Waste ground ; common.—Fl. May—July. Perennial.

9. *V. alpína* (Alpine Speedwell), differing from the last in being more erect, with larger *leaves ;* fewer, more crowded, darker blue *flowers*, and a very short persistent *style ;* occurs only on Highland Scottish mountains.—Fl. July, August. Perennial.

10. *V. frúticans* (Blue Rock Speedwell).—Nearly

glabrous; *stem* much branched, woody; *leaves* leathery; *flowers* few, ½ in. across, brilliant blue, very handsome, on stiff, sub-corymbose stalks; *capsules* ovate.—Lofty Scottish mountains; rare.—Fl. July—September. Perennial.

*** *Perennial; flowers in terminal racemes; corolla-tube longer than broad.*

11. *V. spicáta* (Spiked Speedwell).—*Stem* erect, branching at the base, about 6 in. high; *leaves* thick, nearly sessil, ewith a wedge-shaped base, serrate above the middle; *flowers* ¼ in. across, bright blue, in a long, dense spike.—Chalk downs in Cambridgeshire and Suffolk; rare.—Fl. July, August. Perennial.

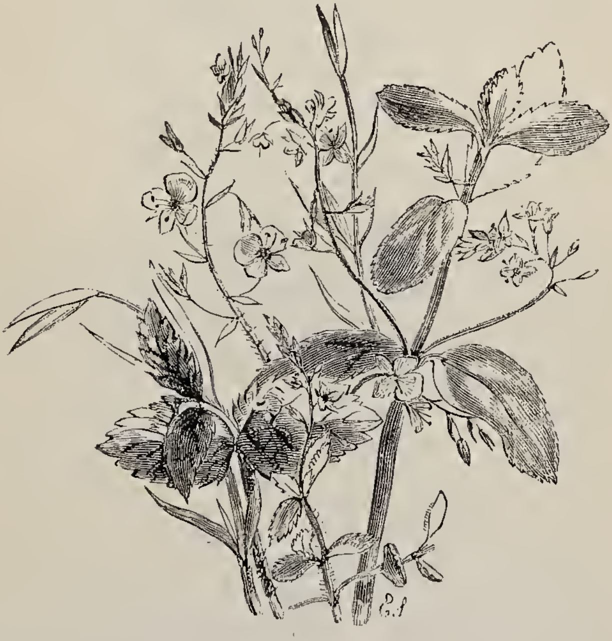
12. *V. hýbrida* (Tall Spiked Speedwell) is larger, reaching 18 in., and has stalked *leaves*, rounded at the base and serrate throughout.—Limestone cliffs in the west; rare.—Fl. July, August. Perennial.

**** *Perennial; leaves all opposite; flowers in axillary racemes.*

13. *V. officinális* (Common Speedwell).—A hairy plant with prostrate, ascending *stems*, with short hairs all round; oval, shortly-stalked, serrate *leaves*; and erect, many-flowered, spike-like racemes of lilac or pale blue *flowers*, ⅙ in. across.—Dry pastures, heaths, and woods; common. The leaves are astringent and bitter, and are sometimes made into tea.—Fl. May—August. Perennial.

14. *V. Chamædrys* (Germander Speedwell, Blue Speedwell, Bird's-eye).—A well-known and favourite plant; *stem* ascending, with two lines of hairs; *leaves* sessile, hairy, deeply serrate: *flowers* bright blue, ½ in. across, in a long-stalked, slender, loose raceme: *capsule* shorter than the calyx.—Hedge-banks; abundant. No

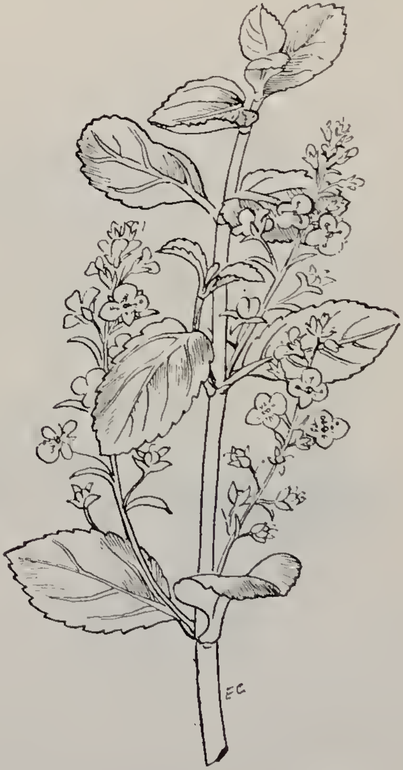
one can have walked in the country in spring without admiring its cheerful blossoms, but few perhaps notice the singular pair of hairy lines, which traverse the whole length of the stem, shifting from side to side whenever they arrive at a fresh pair of leaves, and serving to conduct rain-water to the root. It is sometimes erroneously called Forget-me-not.—Fl. April—June. Perennial.



VERÓNICA CHAMÆDRYS (*Germander Speedwell*), V. OFFICINÁLIS (*Common Speedwell*), V. SCUTELLÁTA (*Marsh Speedwell*), and V. BECCABÚNGA (*Brooklime*).

15. *V. montána* (Mountain Speedwell).—A similar species, but with *stem* hairy all round; *leaves* stalked; fewer, smaller, paler *flowers* in a shorter raceme; and *capsule* much longer than the calyx.—Moist woods; common.—Fl. May—September. Perennial.

16. *V. scutelláta* (Marsh Speedwell).—A weak straggling, generally glabrous plant; *leaves* sessile, linear-lanceolate, slightly toothed; *flowers* pale pink in alternate racemes; *capsules* of 2 large, flat, round lobes on slender reflexed stalks.—Marshes; common.—Fl. June—August. Perennial.



VERÓNICA BECCABÚNGA (*Brooklime*).

17. *V. Anagállis-aquática* (Water Speedwell).—A stout, glabrous, succulent, erect, slightly-branched plant, 1—2 feet high; *stem* hollow; *leaves* sessile, some-

times auricled, lanceolate, serrate; *flowers* $\frac{1}{5}$ in. across, pale pink or white, in opposite racemes.—Stagnant water; common.—Fl. June—August. Perennial.

18. *V. Beccabúnga* (Brooklime).—A very similar species, but smaller, with *stem* rooting at the base; stalked, oval, blunt, slightly serrate *leaves;* and opposite racemes of bright blue *flowers*, $\frac{1}{3}$ in. across.—Brooks and ditches; common, growing with Water-cresses and Water-Parsnip.—Fl. May—September. Perennial.

ORD. LVI. OROBANCHÁCEÆ.—BROOM-RAPE FAMILY.

A small Order of succulent, brownish plants, all of which are either parasitical on the roots of other plants or are partly saprophytes, living, that is, upon decaying organic matter. They have no true *leaves*, but are more or less clothed with fleshy, pointed scales, which are most abundant near the base of the stem. The *flowers* are large for the size of the plant, and arranged in a spike or raceme, with one or more scale-like *bracts* at the base of each flower. The *calyx* is persistent; the *corolla* monosymmetric, usually 2-lipped, imbricate in the bud, persistent; *stamens* 4, didynamous; *ovary* in a fleshy disk, 1-chambered, many-ovuled; *style* 1; *stigma* 2-lobed; *capsule* 2-valved; *seeds* small, numerous, parietal. The seeds, it is said, will lie buried for some years in the ground without germinating, until they come in contact with the young roots of some plant adapted to their wants, when they immediately sprout, and seize on the points of the roots, which swell, and serve as a base to the parasite. There are but two British genera belonging to this Order, *Orobánché* and *Lathræa*, some species of which are confined to particular species of host plants, whilst others have a wider range. The species of *Orobánché* are difficult to discriminate.

1. OROBÁNCHÉ.—Upper lip of *corolla* erect, 2-lobed.
2. LATHRÆA.—*Flowers* secund; upper lip of *corolla* arched, entire.

1. OROBÁNCHÉ (Broom-rape). — Parasites with *flowers* in a many-sided spike, with 1—3 *bracts* below each; *calyx* of 2, lateral, usually 2-cleft sepals; *corolla* gaping, 4—5-cleft, its upper lip erect, 2-lobed, its base persistent. (Name from the Greek *órobos*, a vetch, *ancho*, I strangle, from the injurious effects produced in the plants to which they attach themselves.)

* *Bracts 3 under each flower.*

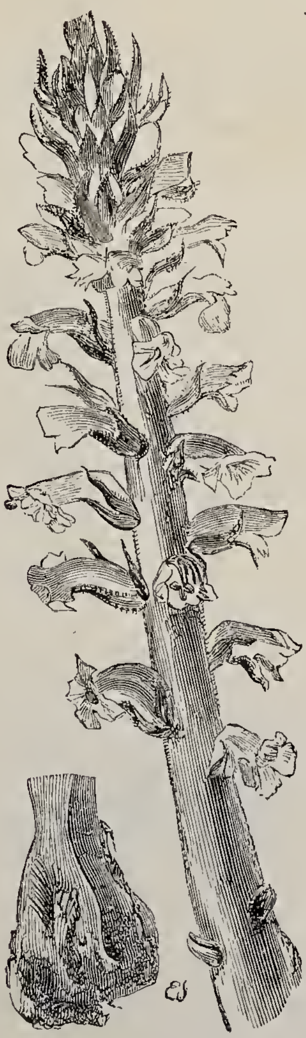
1. *O. purpúrea* (Blue Broom-rape).—A slender, tough, unbranched species, with pale blue *flowers* with purple veins, occurring on Milfoil.—Southern counties; rare.—Fl. June, July. Perennial.

2.* *O. ramósa* (Branched Broom-rape), distinguished by its branched *stem*, occurs on the roots of Hemp, with the seeds of which it is introduced, but is very rare.—Fl. August, September. Annual.

** *Bracts one to each flower.*

3. *O. májor* (Greater Broom-rape).—A stout, viscid, leafless, club-like plant, of a reddish-brown hue, with *stem* much swollen at the base, and clothed with tapering scales, which pass into bracts as they ascend the stem; *flowers* crowded into a dense spike; *corolla* reddish-yellow, tubular, the lower lip 3-lobed, the middle lobe blunt and longer than the others; *stamens* inserted at the base of the corolla, smooth below, downy above; *style* downy; *stigma* of 2 diverging yellow lobes.—On the roots of Furze, Broom, and other shrubs of the Order *Leguminósæ;* frequent.—Fl. May—August. Perennial.

4. *O. rúbra* (Red Broom-rape).—A small, reddish species, 4—8 in. high, with a loose spike of dull red



OROBÁNCHÉ MÁJOR (*Great Broom-rape*).

sweet-scented *flowers*, with a downy *corolla* and pale pink, 2-lobed *stigma*.—On the roots of Thyme when growing on basaltic rock in Scotland and Ireland, and on magnesian rock at the Lizard; rare.—Fl. June, August. Perennial.

5. *O. caryophyllácea* (Clove-scented Broom-rape), a similar, but stouter, brown species with reddish-brown or purplish *flowers*, with hairy *stamens* and a dark purple stigma, grows on the roots of *Gálium Mollúgo* (Hedge Bed-straw) in Kent.—Fl. June, July. Perennial.

6. *O. elátior* (Tall Broom-rape).—A tall, yellow plant, 2—3 feet high, with many-veined *sepals; corolla* slightly compressed above, lobes of lower lip nearly equal, acute; *stamens* hairy; *stigma* yellow.—On *Centauréa Scabiósa;* rare.—Fl. June—August. Perennial.

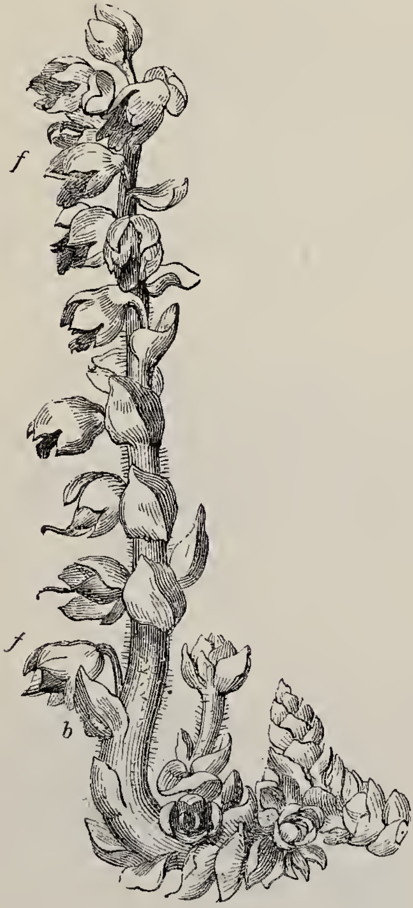
7. *O. Pícridis* (Picris Broom-rape).—A pale species, about a foot high, with 1—3-veined *sepals;* toothed, nearly equal lobes to the lower lip of the *corolla; stamens* hairy below; *stigma* purple.—On *Picris hieracioïdes*, rare.—Fl. July. Perennial.

8. *O. Hédera* (Ivy Broom-rape).—A purplish species, about a foot high, with loose *spike;* 1-veined *sepals;* nearly glabrous *stamens*, and yellow *stigma*.—On Ivy; uncommon.—Fl. June, July. Perennial.

9. *O. mínor* (Lesser Broom-rape).—A slender, yellow-brown or purplish species, about a foot high, with a loose *spike;* many-veined, ovate, acuminate *sepals;* white or yellowish *corolla-limb; stamens* hairy below, smooth above; *style* nearly smooth; *stigma* purple.—Chiefly upon Clovers, but occasionally on various other plants; frequent.—Fl. June, July. Annual.

10. *O. amethýstea* (Purple Broom-rape), with its *corolla* much curved at the base, and the middle lobe of the lower lip much the longer, occurs rarely on *Daúcus gúmmifer*.—Fl. June. Annual.

2. Lathræa (Toothwort).—A pale, pink-tinged, fleshy plant, partly parasitic, partly saprophytic, with



LATHRÆA SQUAMÁRIA (*Toothwort*).

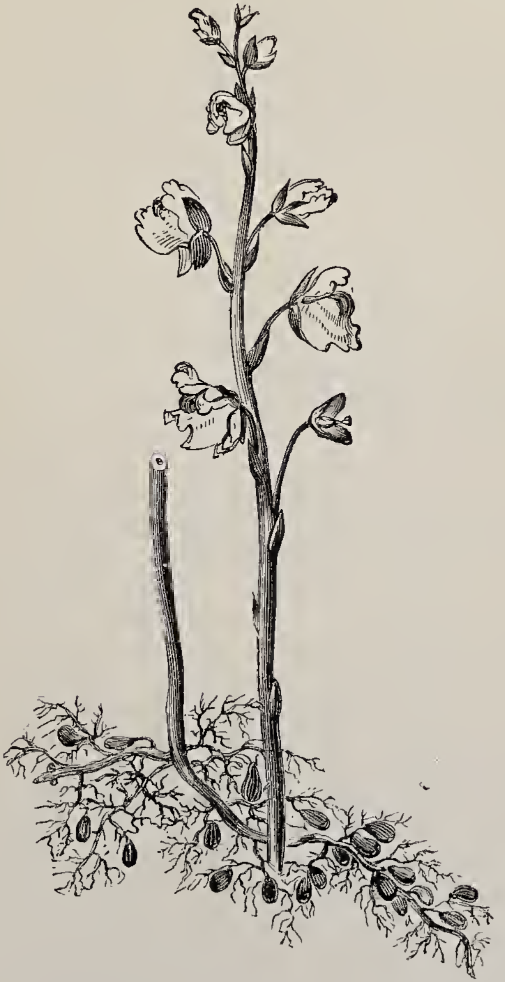
its *flowers* in 2 rows down one side of the stem ; *calyx* bell-shaped, 4-cleft ; *corolla* gaping, 2-lipped, the upper lip arched, entire, deciduous, the tube presistent.

(Name from the Greek *lathraios*, hidden, from its growth in shady places.)

1. *L. Squamària* (Toothwort).—The only species, a remarkable pale plant, with a fleshy, branched *rhizome* thickly clothed with tooth-like *scales*, which are hollowed out into glandular cavities ; each *branch* bears a 1-sided raceme of drooping, dull reddish *flowers*, with a broad *bract* at the base of each.—Among dead leaves and on the roots of Hazel, Elm, &c. The glands in the hollows of the buried scales probably aid in the absorption of liquid organic food from the decaying leaves.—Fl. April, May. Perennial.

ORD. LVII. LENTIBULARIÉÆ.—BUTTERWORT FAMILY.

Herbaceous plants living in water or in marshy ground, bearing either undivided radical *leaves*, or much divided cauline ones with numerous small bladders on them. Their *flowers* are monosymmetric, and either solitary or racemose ; the *calyx* inferior, persistent ; *corolla* 2-lipped, spurred, deciduous ; *stamens* 2 ; *ovary* superior, 1-chambered ; *style* 1, very short ; *stigma* of 2 unequal lips ; *capsule* 2-valved, many-seeded. The two British genera, *Utriculária*, the Bladderworts, and *Pinguícula*, the Butterworts, are both of them carnivorous. The former are submerged, rootless plants with finely divided leaves, bearing minute bladders, furnished with trap-doors, which capture water-fleas and other minute aquatic animals, and yellow flowers which rise above the surface of the water to open. The Butterworts are small, terrestrial plants with rosettes of radical leaves with inrolled margins, and viscid, glandular surfaces which capture small flies. Their solitary purple flowers have some resemblance to violets. " *Pinguícula vulgáris* (Common Butterwort) has the property of giving consistence to milk and of preventing it



UTRICULÁRIA VULGÁRIS (*Common Bladderwort*).

separating into either whey or cream. Linnæus says that the solid milk of the Laplanders is prepared by pouring it, warm from the cow, over a strainer on which fresh leaves of Pinguicula have been laid. The milk, after passing among them, is left for a day or two to stand, until it begins to turn sour; it throws up no cream, but becomes compact and tenacious, and most delicious in taste. It is not necessary that fresh leaves should be used after the milk is once turned; on the contrary, a small portion of this solid milk will act upon that which is fresh, in the manner of yeast."—(*Lindley*).

1. UTRICULÁRIA.—Submerged, aquatic plants with much divided *leaves* bearing bladders; *calyx* of 2 equal sepals; *corolla* personate.

2. PINGUÍCULA.—Terrestrial plants with radical *leaves* and solitary *flowers*; *calyx* 2-lipped, *upper lip* 3-cleft, *lower* 2-cleft; *corolla* gaping.

1. UTRICULÁRIA (Bladderwort).—Submerged, rootless, aquatic plants with floating, much-divided *leaves*, with thread-like segments, bearing small bladders; *flowers* few, in a raceme, monosymmetric, yellow; *calyx* of 2 equal sepals; *corolla* personate, spurred; *stamens* 2, lateral. (Name from the Latin *utrículus*, a little bladder.)

1. *U. vulgáris* (Common Bladderwort).—A remarkable submerged, aquatic plant; *leaves* pinnately divided, ciliate, and bearing bladders $\frac{1}{5}$ in. long; *flowers* 4—8, on a stout scape 6—12 in. high, in a loose raceme; *bracts* ovate, thick, about one-third the length of the *pedicels*; *corolla* bright yellow or orange, with nearly equal lobes, and conical acute *spur* adpressed to, and half as long as, the lower lip.—Ditches and pools; frequent.—Fl. June—August. Perennial.

2. *U. neglécta* (Overlooked Bladderwort). —A more slender species with *leaves* pinnately divided and ciliate, bearing bladders $\frac{1}{10}$ in. long; *bracts* lanceolate,

not more than a quarter as long as the slender, nearly erect *pedicels ; upper corolla-lip* 2 or 3 times as long as the broad, flat, lower one, lemon-yellow ; *spur* conical. —Pools ; rare.—Fl. June—September. Perennial.

3. *U. mínor* (Lesser Bladderwort). — A small, slender species with repeatedly forked, not ciliate *leaves* bearing bladders $\frac{1}{12}$ in. long ; and 2—6-flowered racemes of small, pale yellow *flowers*, with equal *corolla-lobes* and a very short, blunt *spur*.—Pools and ditches ; not common.—Fl. June—September. Perennial.

4. *U. intermēdia* (Intermediate Bladderwort).—*Leaves* distichous, repeatedly forked, ciliate ; *bladders* $\frac{1}{5}$ in. long, on slender stalks, separate from the leaves ; *flowers* 3—4 in a raceme, pale yellow ; *upper corolla-lip* twice as long as the lower ; *spur* conical, acute. —Pools and ditches ; rare.—Fl. July—September. Perennial.

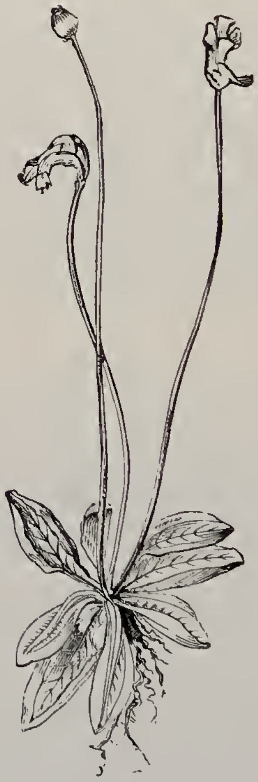
2. Pinguícula (Butterwort).—Marsh plants with small *roots ;* a rosette of entire, involute, viscid, radical *leaves ;* and solitary *flowers* on long, erect *pedicels* ; *calyx* 2-lipped ; *upper lip* 3-cleft ; lower 2-cleft ; *corolla* gaping, spurred. (Name from the Latin *pinguis*, fat, from the greasy leaves.)

1. *P. vulgáris* (Common Butterwort).—A singular and very beautiful plant. The *root* is fibrous, and has a very loose hold on the soft ground in which it grows. The radical *leaves* are oblong, pale green, and of a peculiar, parchment-like, frosted appearance. The *flowers* are $\frac{2}{3}$ in. long, violet, and handsome, growing in a nodding manner on a *peduncle* 3—4 in. long, with very unequal *corolla-lobes* and a short, tapering *spur*.—Bogs, heaths, and wet rocks, principally in the north.—Fl. May—July. Perennial.

2. *P. grandiflóra* (Large-flowered Butterwort).—A larger and yet more beautiful plant, with broader

leaves, *flowers* 1 in. long, with a longer and often notched *spur*.—Bogs in co. Cork and Kerry.—Fl. May—July. Perennial.

3. *P. alpína* (Alpine Butterwort).—Smaller than *P. vulgáris*, with yellowish-white *flowers*, ½ in. long, on short, smooth *peduncles*, and with a very short, conical *spur*.—Bogs in Ross and Skye.—Fl. May, June. Perennial.



PINGUÍCULA LUSITÁNICA (*Pale Butterwort*).

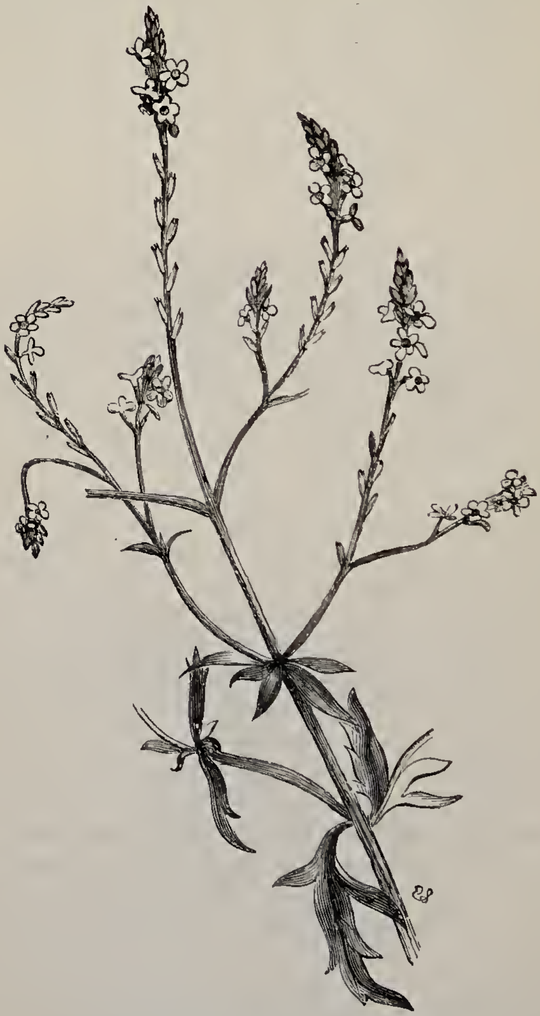
4. *P. lusitánica* (Pale Butterwort).—The smallest British species, with greenish-white, veined *leaves*, downy *peduncle*, and pale lilac *flowers* $\frac{1}{3}$ in. long, with a yellowish throat, nearly equal *corolla-lobes*, and blunt, cylindrical *spur*, curved downwards.—Bogs in the South-west of England and the West of Scotland and Ireland.—Fl. June—September. Perennial.

ORD. LVIII. VERBENÁCEÆ.—VERVAIN FAMILY.

A considerable, but mainly tropical Order, closely allied to the *Labiátæ*, comprising trees, shrubs, and herbs, with opposite, exstipulate *leaves*, and perfect, monosymmetric, bracteate *flowers*; *calyx* inferior, tubular, imbricate, persistent; *corolla* hypogynous, with a long tube, usually 2-lipped, imbricate; *stamens* didynamous, epipetalous, or rarely 2 only; *ovary* 2 or 4-chambered; *style* 1; *stigma* sometimes 2-cleft; *seeds* 1 or 2 in each chamber. Many of them are aromatic and fragrant, such as *Aloýsia citriodóra*, formerly called *Verbéna triphýlla*, the Lemon-plant of gardens, well known for the delicious fragrance of its rough, lanceolate leaves. Many species of *Verbéna* from America are cultivated for their brilliantly coloured flowers; and, though it is now little thought of, great virtues were in ancient times attributed to the one British representative of the Order, the common Vervain, insomuch that it was accounted a holy plant, and is said to have been used to sweep the tables and altars of the gods. By far the most valuable plant in the Order is the Teak (*Tectóna grándis*), a native of India and Burma. The trunk of this tree sometimes attains the height of two hundred feet, and its leaves are twenty inches long by sixteen broad. The timber somewhat resembles mahogany in colour, but is stronger. For shipbuilding teak is unequalled.

1. VERBÉNA (Vervain).—Herbs or undershrubs

with 4-angled *stem;* opposite *leaves; flowers* in bracteate, terminal spikes or racemes; *calyx* unequally



VERBÉNA OFFICINÁLIS (*Common Vervain*).

5-cleft; *corolla* salver-shaped, unequally 5-cleft; *stamens* included; *fruit* of 4 1-seeded nutlets. (Name, the Latin name of the plant.)

1. *V. officinális.*—The only British species, a slender, tough-stemmed plant, 1—2 feet high, with few roughish, 3-cleft *leaves*, and small, lilac *flowers* in very slender, terminal, compound spikes.—Waste ground; common.—Fl. July—September. Perennial.

ORD. LIX.—LABIÁTÆ.—THE LABIATE FAMILY.

A large and clearly defined Natural Order, comprising upwards of 2,500 species of herbs and shrubs, which agree in having square *stems*; opposite, decussate, simple, exstipulate *leaves*; and bilabiate, or 2-lipped *flowers* in axillary cymes, forming generally verticillasters or false whorls. The *calyx* is inferior, tubular, persistent, and 5-cleft; the *corolla* hypogynous, monosymmetric, and mostly 2-lipped (bilabiate); the lower lip larger and 3-lobed, the upper less distinctly 2-lobed; the *stamens* 4, didynamous, or rarely 2, maturing before the stigmas (protandrous); *ovary* superior, of 2 united carpels, deeply 4-lobed, with a single *style* arising from the base of the lobes (gynobasic); *stigma* 2-cleft; *fruit* a regma of 4 nutlets, each containing a single *seed*. They occur mostly in warm and temperate climates, and are remarkable for not possessing injurious properties in any single instance. Most of them have strong aromatic perfumes, which are often pleasant, owing to the presence of abundance of volatile or essential oil, from which camphor-like, solid substances can be extracted. Menthol, for instance, is obtained from various species of Mint (*Méntha*). It is a valuable remedy in neuralgia. Patchouli (*Pogostémon Pátchouli*) is a favourite perfume, and Lavender (*Lavándula vera*) is not only also a perfume, but has medicinal uses as a stimulant. Several kinds of Mint, especially Peppermint (*Méntha piperíta*) and Pennyroyal (*M. Pulégium*), are much used in medicine. Rosemary (*Rosmarínus officinális*) is remarkable for its undoubted power of encouraging the growth of the hair and curing baldness, and is an active ingredient in most pomatums. It is one of the plants used in the preparation of Eau de Cologne and Hungary water, and the admired flavour of Narbonne honey is ascribed to the bees feeding on the flowers of this plant, as that of the honey of Hymettus is indebted for its flavour to Wild Thyme. Our aromatic pot-herbs, the leaves of most of which are used in a dried state, are all members of this Order. Among them are Mint (*Méntha víridis*), Sage (*Sálvia officinális*), Thyme (*Thýmus vulgáris*), Basil (*Ócimum Basílicum*), Marjoram (*Oríganum Marjorána*), and Savory (*Saturéia*). The tubers of *Stáchys tuberífera* have been introduced from Japan, under the name of Chinese artichokes, as a substitute for potatoes. Several species of Sage (*Sálvia*) are also cultivated for the sake of their brilliantly coloured blossoms.

* *Stamens 4, distant, the two upper shorter; nutlets free smooth or nearly so.*

† *Corolla subregular; stamens spreading.*

1. Méntha.—All four *stamens* perfect.
2. Lýcopus.—Two *upper stamens* aborted.

†† *Corolla 2-lipped.*

3. Oríganum.—*Calyx* with 5 equal teeth; *stamens* diverging.
4. Thýmus.—Prostrate; *leaves* small; *calyx* 2-lipped; *stamens* diverging.

5. Calamíntha.—*Corolla-tube* straight; *stamens* converging at their tips.

*6. Melíssa.—*Corolla-tube* curved; *stamens* converging at their tips.

** *Stamens 2; anthers distractile; nutlets free, smooth or nearly so.*

7. Sálvia.—*Calyx* and *corolla* both 2-lipped.

*** *Stamens 4, the two upper longer; nutlets free, smooth.*

8. Népeta.—*Calyx* with 5 nearly equal teeth; *corolla* with flat upper lip.

**** *Stamens 4, parallel, the 2 upper shorter; nutlets free.*

† *Calyx 2-lipped.*

9. Scutellária. — *Calyx* closing over the fruit; 2 lower *anthers* 1-chambered.

10. Prunélla. — *Calyx* closing over the fruit; *anthers* all 2-chambered; *filaments* forked.

11. Melíttis.—*Calyx* inflated; *anthers* exserted.

†† *Calyx with 5—10 equal or sub-equal teeth.*

12. Marrúbium.—*Calyx* tubular, 10-toothed; *anthers* included.

13. Stáchys.—*Calyx* sub-campanulate, with 5 equal teeth; *anthers* smooth, bursting lengthwise.

14. Galeópsis. — *Calyx* sub-campanulate, with 5 prickly teeth; *anthers* fringed, bursting transversely.

*15. Leonúrus.—*Calyx* sub-campanulate, with 5 prickly teeth; *anthers* smooth, warty, bursting lengthwise.

16. **Lámium.**—*Calyx* sub-campanulate, 5-toothed; *anthers* hairy, bursting lengthwise.

17. **Bállota.**—*Calyx* funnel-shaped, with 5 broad, spreading, prickly teeth; *anthers* smooth, bursting lengthwise.

***** *Stamens 4, parallel, the 2 upper shorter; nutlets united, wrinkled.*

18. **Teúcrium.**—*Calyx* tubular, 5-toothed; upper lip of *corolla* deeply 2-cleft.

19. **Ájuga.**—*Calyx* ovoid, 5-cleft; upper lip of *corolla* very short, notched.

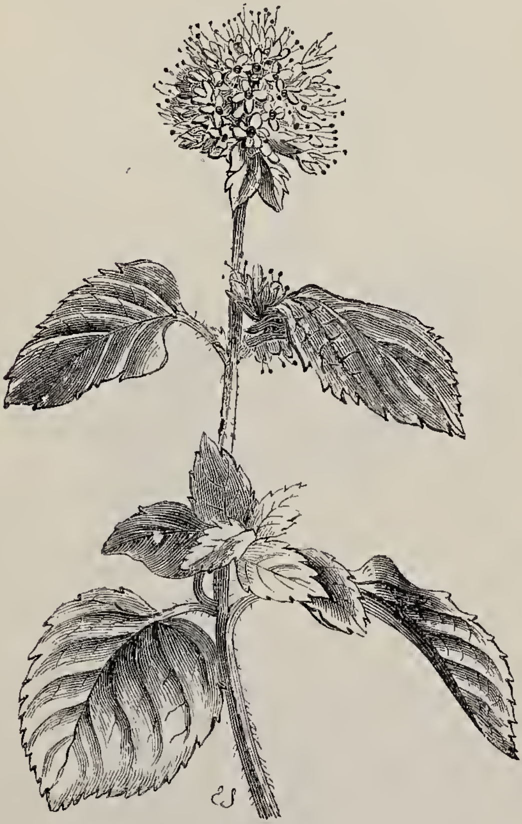
1. **Méntha** (Mint).—Strongly-scented herbs, with creeping *rhizomes* and *runners; flowers* small, in many-flowered whorls, often crowded, with small bracts, into terminal spikes; *calyx* with 5 equal teeth; *corolla* campanulate, nearly polysymmetric, 4-lobed, with a very short tube; *stamens* 4, equal, erect, distant, smooth; *nutlets* free, smooth. (Name, the Classical name of the group.)

* The species are very difficult to distinguish, graduating into one another, and apparently also forming hybrids.

† *Whorls forming terminal spikes, with minute bracts.*

1. *M. rotundifólia* (Round-leaved Mint).—A viscid plant, 1—3 feet high; *stem* somewhat woody, usually much branched; *leaves* sessile, broadly elliptical, remarkably blunt, often cordate, much wrinkled, and nearly smooth above, shaggy beneath; *flowers* lilac or white, in dense, cylindrical, slightly interrupted spikes; *bracts* lanceolate; *corolla* hairy.—Waste ground; not common. The scent is acrid and powerful, but not agreeable.—Fl. August, September. Perennial.

2. *M. alopecuroídes,* intermediate between the preceding and following species, has its *runners* underground; its *leaves* slightly stalked and very hairy, but not felted, beneath, and its *spikes* short and stout, or conical-cylindrical.—Chiefly in the East of England; rare.—Fl.—August, September. Perennial.



MENTHA HIRSÚTA (*Hairy Mint*).

3. *M. longifólia* (Horse Mint).—A strong- but sweet-scented plant, usually growing in masses, 2—3

feet high, with sub-sessile, oblong-lanceolate, acute, serrate *leaves*, more or less hairy above, silky and white beneath; *flowers* lilac, in a dense, slender, nearly or quite uninterrupted spike; *bracts* awl-shaped; *corolla* hairy.—Damp waste ground; frequent. —Fl. August—September. Perennial.

4.* *M. víridis* (Spearmint).—Probably a cultivated form of the preceding, escaped from gardens; *leaves* sessile, glabrous, lanceolate, acute, serrate; *spike* slender, cylindrical, interrupted; *corolla* smooth. —Wet places; rare.—This is the form commonly cultivated as a pot-herb, and is distinguishable by its pungent smell.—Fl. August, September. Perennial.

5. *M. piperíta* (Peppermint). — A smaller, more slender, glabrous species, 1—1½ feet high, with stalked, ovate-lanceolate, acute, serrate *leaves; spikes* short, lax, blunt, and interrupted below; *bracts* lanceolate; *calyx* often red.—Wet places; uncommon. Perhaps a cultivated form of *M. hirsúta.*—Fl. July—September. Perennial.

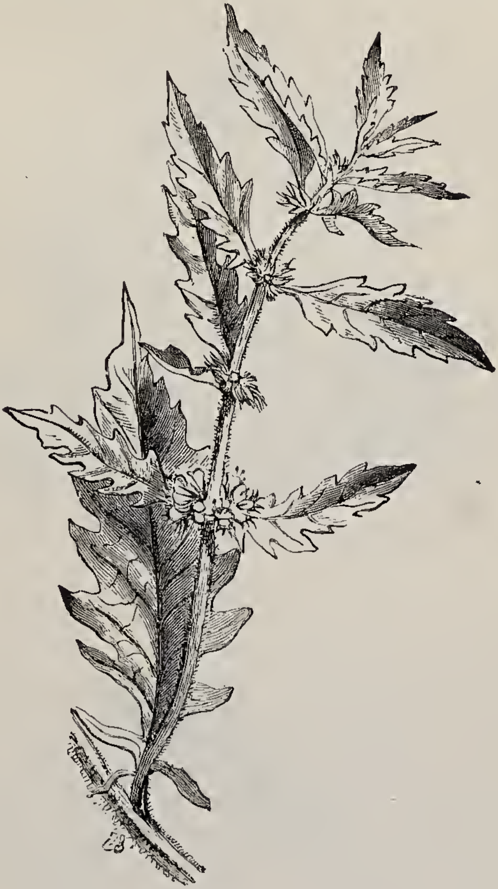
6. *M. pubéscens* (Downy Mint).—*Stem* 12—18 in. high; *leaves* stalked, ovate-oblong, serrate, hairy above, woolly beneath; *spikes* cylindric, stout, dense, interrupted below.—Middle and South of England only; rare.—Fl. August, September. Perennial.

7. *M. hirsúta* (Hairy Mint, Capitate Mint). — The commonest and one of the most variable of the Mints, growing in extensive masses in wet places, 1—4 feet high, with a strong smell; *leaves* stalked, ovate, serrate, acute, downy on both surfaces; *flowers* pale lavender, in axillary and terminal rounded heads, hairy.—Banks of rivers and marshes; abundant. The Bergamot Mint (*M. citráta*) is a glabrous form. —Fl. July—September. Perennial.

†† *Whorls in the axils of leafy bracts.*

8. *M. satíva* (Marsh Whorled Mint). — With

difficulty separated from the preceding ; but growing 2—5 feet high, with *leaves* green, though hairy on both surfaces, and with all the *whorls of flowers* separate, all the *bracts* leafy, and the uppermost ones sometimes with no flowers in their axils ; *calyx-teeth* lanceolate-acuminate. — Wet places ; common. — Fl. July—September. Perennial.



LÝCOPUS EUROPÆUS (*Common Gipsy-wort*).

9. *M. rúbra* (Red Mint), a less hairy plant with red veins to its *leaves*, is a not uncommon form of the preceding.

10. *M. grácilis* (Slender Mint), includes slender, green, and nearly smooth forms with the *leaves*, especially the upper ones, sessile or nearly so, and the smell of Basil.

11. *M. gentílis* has spreading, rather thick *leaves*, nearly all of one size and hairy along their veins. It is a not uncommon type.

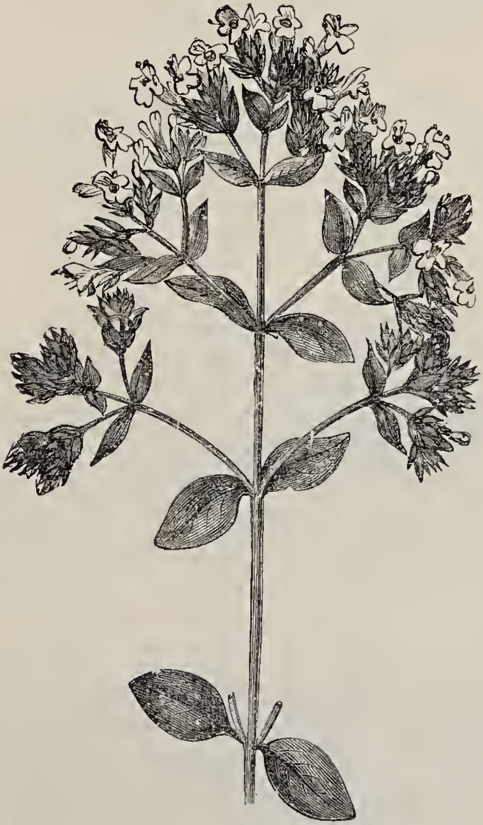
12. *M. arvénsis* (Corn Mint), a branched, downy plant, 6—18 in. high, with stalked, ovate, serrate, hairy *leaves*, either acute or blunt, all nearly equal in size; and small lilac *flowers* in dense, distant whorls; *calyx* bell-shaped, with deltoid teeth, hairy. This last is the most constant character by which to distinguish the forms of this group from the four preceding ones. —Cornfields; common. The plant has a strong smell.—Fl. July—September. Perennial.

††† *Whorls distant, in the axils of the lower leaves.*

13. *M. Pulégium* (Pennyroyal).—The smallest of the genus, and very different in habit from any of the others; the *stems* are prostrate; the *leaves* small, shortly-stalked, ovate, nearly smooth; the *flowers* red, in distant, globose, many-flowered whorls; *calyx* downy, its mouth closed with hairs.—Wet heathy places; not common. The whole plant has an agreeable perfume and flavour, and it is commonly cultivated in cottage gardens to be made into a tea which is a rustic remedy for colds.—Fl. July—September. Perennial.

2. Lýcopus (Gipsy-wort).—Marsh plants with toothed *leaves* and small sessile *flowers* in crowded axillary whorls; *calyx* bell-shaped, with 5 equal teeth;

corolla short, nearly polysymmetric, 4-cleft; *stamens* 4, distant, the 2 upper ones not producing pollen; *nutlets* free, smooth. (Name from the Greek *lúkos*, a wolf, *pous*, a foot, from a fancied resemblance in the leaves.)



ORÍGANUM VULGÁRÉ (*Common Marjoram*).

1. *L. europǽus* (Common Gipsy-wort).—The only British species, with creeping *rhizome* and *runners;*

slightly branched, erect, acutely 4-angled *stem* 1—3 feet high; sub-sessile, deeply cut or pinnatifid, nearly smooth *leaves;* and minute white *flowers,* dotted with red, in crowded whorls in the axils of the upper leaves. —Fl. June—September. Perennial.

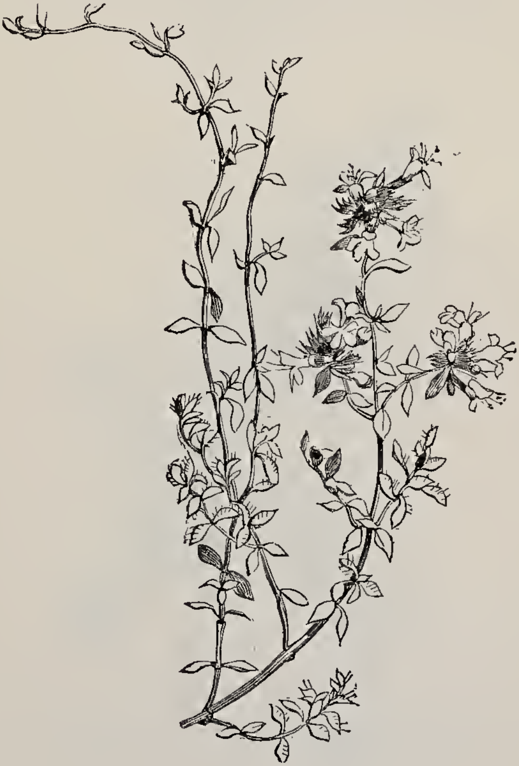
3. Oríganum (Marjoram).—Aromatic plants, with their *flowers* crowded in corymbose cymes with imbricate *bracts*; *calyx* with 5 equal teeth, 10—13-ribbed, the throat hairy; *corolla* obscurely 2-lipped; *stamens* 4, distant; *nutlets* free, smooth. (Name from the Greek *óros*, mountain, *gános*, joy, the plant growing on high ground.)

1. *O. vulgáré* (Common Marjoram).—The only British species, growing about a foot high, and distinguished by its shortly-stalked, broadly ovate, downy *leaves* and heads of rosy *flowers* crowded into a corymbose cyme, with deeply red-tinged, imbricate *bracts* forming 4-sided spikelets.—Dry bushy places, especially on chalk or limestone; common. The whole plant is fragrant and aromatic, and is frequently cultivated as a pot-herb.—Fl. July—September. Perennial.

4. Thýmus (Thyme).—Small, prostrate, wiry, aromatic plants, much branched and often hairy; *leaves* small; *flowers* rose-colour, rarely white, in axillary or spiked, few-flowered whorls; *calyx* 2-lipped, 10—13-ribbed, the throat hairy; *corolla* obscurely 2-lipped, the upper lip notched, the lower 3-cleft; *stamens* 4, distant, usually exserted. (Name, the Classical name of the plant.)

1. *T. Serpýllum* (Mountain Thyme).—A well-known and favourite little plant, forming a cushion with a fringe of prostrate, flowerless shoots, which in the next year send up erect flowering-shoots from

near their bases; *leaves* obovate, fringed; *flowers* with deep red *calyx* and rose-coloured *corolla*, in terminal heads.—The commoner form in mountain districts. The whole plant diffuses a fragrant, aromatic perfume, which, especially in hot weather, is perceptible at some distance.—Fl. June—August. Perennial.

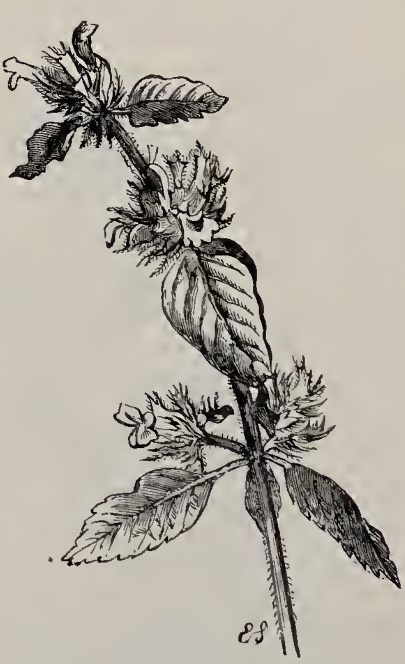


THÝMUS SERPYLLUM (*Wild Thyme*).

2. *T. Chamædrys* (Heath Thyme).—*Stems* all ascending; *leaves* ovate; *flowers* in axillary heads.—Heaths; not common.—Fl. June—September. Perennial.

5. Calamíntha (Calamint).—*Flowers* either crowded in the axils or in loose panicles; *calyx* tubular, 2-lipped, 13-nerved ; *corolla* 2-lipped, with straight tube; *upper lip* nearly flat, *lower* spreading, 3-cleft ; *stamens* 4, converging at their tips ; *nutlets* smooth. (Name from the Greek *kálos*, beautiful, *mintha*, mint.)

1. *C. Clinopódium* (Wild Basil).—A straggling,



CALAMÍNTHA CLINOPÓDIUM (*Wild Basil*).

softly hairy plant, 1—2 feet high, with ovate, slightly toothed, stalked *leaves* ; and rose-red *flowers* in crowded, many-flowered, mostly axillary whorls, with numerous, long, bristly *bracts* forming a kind of involucre resembling a green foot-stool, whence the old generic name *Clinopódium* (foot-stool).—Dry bushy plants ;

common. The plant is fragrantly aromatic.—Fl. July—September. Perennial.

2. *C. arvénsis* (Basil Thyme).—A small, bushy, downy, herbaceous plant, 6—8 in. high, with ascending, branched *stems;* hairy, ovate, serrate, acute *leaves* on short stalks; and violet *flowers* in whorls of

CALAMÍNTHA OFFICINÁLIS (*Common Calamint*).

5 or 6, with the *calyx* 2-lipped, the *lower lip* bulged at the base, and the *corolla* spotted with white and darker purple.—Dry places; frequent.—Fl. July, August. Annual.

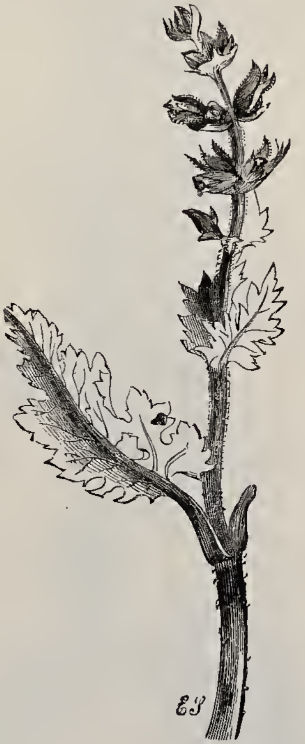
3. *C. parviflóra* (Lesser Calamint).—*Stems* usually many, 12—18 in. high, with short, erect *branches; leaves* ovate, serrate, shortly stalked, pale beneath; *flowers* light purple, in forked cymes; *calyx* with short hairs on its teeth.—Dry banks; rare.—Fl. July, August. Perennial.

4. *C. officinális* (Common Calamint).—A larger, erect, bushy plant; with downy, usually solitary *stem*; long, ascending *branches*; *leaves* on rather long stalks, broadly ovate, slightly serrate, green on both sides, downy; *flowers* light purple, in forked, axillary, few-flowered cymes with small pointed *bracts* in the forks; *calyx* 2-lipped, with long hairs on its teeth, the teeth of the upper lip straight; lower lip of *corolla* with its middle lobe longest.—Dry waste places; not uncommon.—Fl. July, August. Perennial.

5. *C. sylvática*, an allied species, with larger, sharply serrate *leaves* and large *flowers* with the 3 upper teeth of the *calyx* reflexed, and the 3 lobes of the lower lip of the *corolla* equal, occurs on dry banks in Hampshire and South Devon.—Fl. August—October. Perennial.

*6. MELÍSSA (Balm), a closely allied genus, differing from *Calamíntha* mainly in its curved *corolla-tube*, is represented in England only by the one species, *M. officinális*, a hairy plant with numerous erect *stems*, 1—2 feet high; stalked, ovate, crenate *leaves*, wrinkled above, paler beneath; and white *flowers* in shortly-stalked, one-sided, axillary, few-flowered whorls.—It occurs as an escape only, in the south. (Name from the Greek *melíssa*, a bee, bees visiting the flowers for honey.)—Fl. July, August. Perennial.

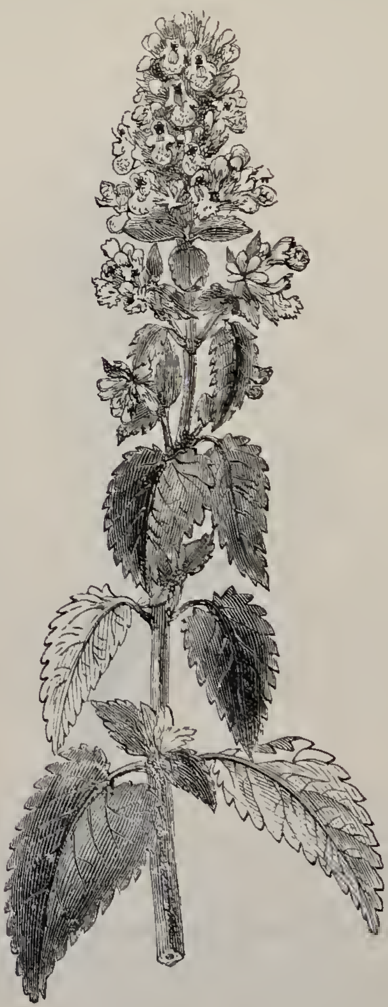
7. **Sálvia** (Sage).—Herbs or shrubs with *calyx* and *corolla* both 2-lipped, the latter gaping; *stamens* 2, with short filaments bearing a long versatile connective with an anther-lobe at each end (distractile), the upper only usually containing pollen. (Name from the Latin *salveo*, I am well, from the healing properties of Sage.)



SÁLVIA VERBENÁCA (*Clary, or Wild Sage*).

1. *S. Verbenáca* (Clary, Wild Sage).—An aromatic, herbaceous plant, 1—2 feet high, with few oblong, blunt, cordate, crenate, much-wrinkled *leaves*, wavy

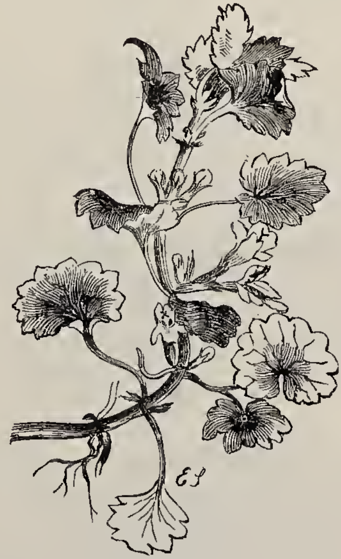
at the edge; and rendered conspicuous by its long



NÉPETA CATÁRIA (*Catmint*).

spikes of purple-blue *flowers*, the *calyx* of which is much larger than the *corolla*, while at the base of each flower are 2 ovate-cordate *bracts*.—Dry pastures, especially near the sea, or on a chalky soil; frequent. The fruit was formerly used in eye-lotions.—Fl. May—September. Perennial.

2. *S. praténsis* (Meadow Clary), distinguished by its large blue *corolla* with a viscid lip, is a rare species, occurring in dry fields in Kent, Oxfordshire, and Cornwall.—Fl. June—August. Perennial.



NÉPETA GLECHÓMA (*Ground Ivy*).

8. Népeta (Catmint).—Herbs with a tubular, 5-toothed, 15-ribbed *calyx*; the tube of the *corolla* longer than the calyx, slender below, dilated at the throat; *upper lip* flat, notched; *lower* 3-lobed, with a large middle lobe; 2 front *stamens* the shortest. (Name of doubtful origin.)

1. *N. Catária* (Catmint).—*Stem* erect, branched, 2—3 feet high, white with mealy down; *leaves* ovate, cordate, serrate, whitish beneath; *flowers* small, white, dotted with crimson, in dense whorls, which towards the summit of the stem are so close as almost to form a spike.—Hedges and waste ground; not uncommon. The whole plant has a strong aromatic odour, resembling Pennyroyal, and peculiarly pleasing to cats, whence it derives its name.—Fl. July—September. Perennial.

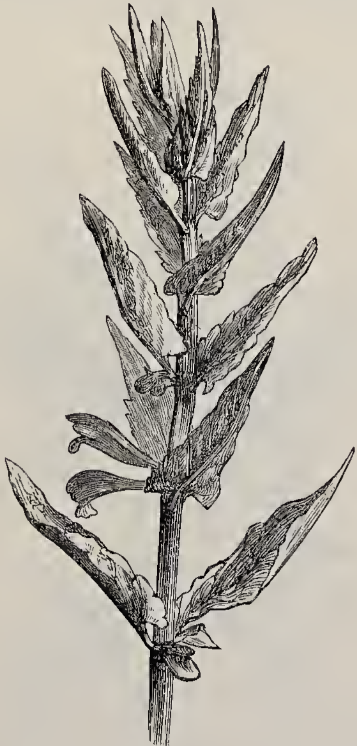
2. *N. Glechóma* (Ground Ivy, Ale-hoof).—A favourite spring flower, with creeping *stems;* kidney-shaped, crenate, roughish *leaves;* and bright blue-purple *flowers* which grow 3 or 4 together in the axils of the leaves. The whole plant has a strong aromatic odour which, though scarcely fragrant, is far from disagreeable. It is bitter, and was formerly used in brewing, as hops are now; and in rural districts its leaves are dried and made into tea. At a distance its blossoms are often mistaken for sweet violets.—Fl. March—June. Perennial.

9. Scutellária (Skull-cap). — Herbaceous or shrubby plants, with *flowers* generally solitary or in pairs in the axils; *calyx* bell-shaped, 2-lipped, upper lip with a concave scale on its back, which finally closes like a lid over the fruit; *corolla* much larger than the calyx; *stamens* 4, parallel, the 2 lower with 1-chambered anthers. (Name from the Latin *scutella*, a little dish, from the lid of the calyx.)

1. *S. galericuláta* (Greater Skull-cap).—A handsome plant, 12—18 in. high, generally branched, with shortly-stalked, oblong-lanceolate, cordate, crenate *leaves*, and rather large, bright blue *flowers* in 1-sided pairs in the axils; *corolla-tube* white inside, much longer than the calyx. Soon after the corolla has fallen off, the upper lip of the calyx closes on the

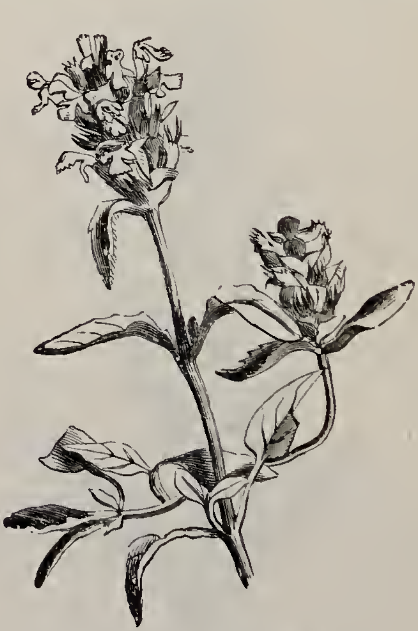
lower, and gives it the appearance of a capsule with a lid; when the fruit is ripe it opens again.—Banks of rivers and ponds; frequent.—Fl. July—September. Perennial.

2. *S. mínor* (Lesser Skull-cap).—A much smaller, more slender little plant, only 4—8 in. high, with subsessile, ovate, obtuse *leaves*; and small, pale pink *flowers*, with a *calyx* like that of the preceding species. —Boggy places; not common, except in the West of England.—Fl. July—October. Perennial.



SCUTELLÁRIA GALERICULÁTA (*Greater Skull-cap*).

10. Prunélla (Self-heal).—Small, hairy plants with their *flowers*, in whorls of about 6, collected into dense, terminal heads with 2 broad, rounded, leafy *bracts* beneath each whorl; *calyx* sub-campanulate, 2-lipped, flattened, and closed when in fruit; *stamens* 4, parallel, all with 2-chambered anthers and forked filaments. (Name said to be from a German word for the *quinsy*, for which complaint it was considered a specific.)

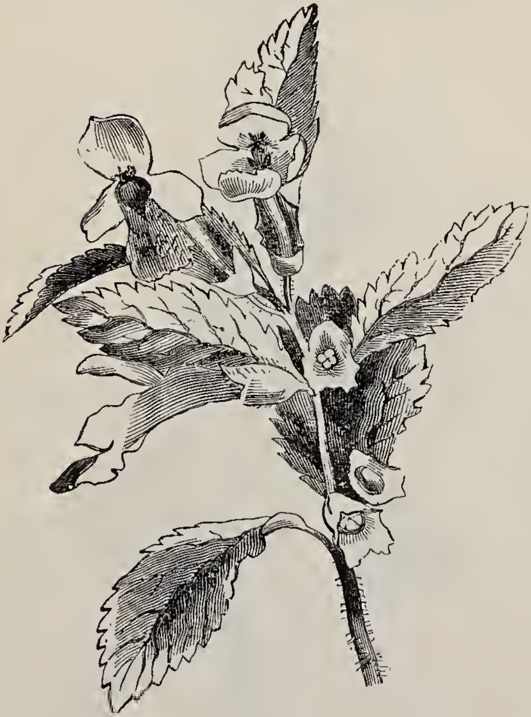


PRUNÉLLA VULGÁRIS (*Self-heal*).

1. *P. vulgáris* (Self-heal).—The only British species, easily distinguished by its whorls of blue-purple, or rarely white, *flowers*, which are collected into a cylindrical *head*, having two kidney-shaped, acuminate, purple-edged *bracts* beneath each whorl, and a pair of ovate *leaves* at the base of the head.—Pastures and

waste ground ; very common.—Fl. July—September. Perennial.

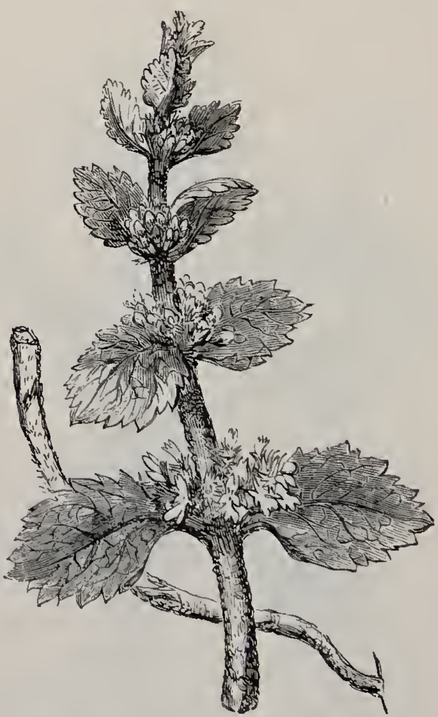
11. Melíttis (Bastard Balm), represented by only one species, *M. Melissophýllum*, a very handsome



MELÍTTIS MELISSOPHÝLLUM (*Wild Balm*).

plant, 1—2 feet high, with large, oblong-ovate, serrate, slightly hairy *leaves*, and conspicuous white *flowers*, spotted or variously variegated with bright rose-colour. The *calyx* is membranous and inflated.—Woods in the south and west ; rare.—The foliage has an offensive smell while fresh, but in drying acquires the flavour of new hay or Woodruff. (Name from the Greek *melítta*, a bee, another form of *melíssa*, referring similarly to its supply of honey.)—Fl. May, June. Perennial.

12. **Marrúbium** (White Horehound).—Woolly, herbaceous plants with small *flowers* in whorls in the axils of leafy *bracts; calyx* tubular, 5—10-ribbed, with 5—10 somewhat prickly teeth, and a hairy throat; *corolla* with tube longer than the calyx, unequally 2-lipped; *upper lip* straight, very narrow, deeply 2-cleft, *lower* 3-lobed, the middle lobe the



MARRÚBIUM VULGÁRÉ (*White Horehound*).

largest; *anthers* included. (Name, the Classical Latin name.)

1. *M. vulgáré* (White Horehound).—The only British species, well distinguished by its bushy *stem*, 1—2 feet high, covered with white woolly down, by its wrinkled, ovate, crenate *leaves*, and its dense whorls of small white *flowers*, of which the *calyx-teeth* are sharp and hooked.—Waste ground; not uncommon.—The

STÁCHYS BETÓNICA (*Wood Betony*).

whole plant is aromatic and bitter, and is a common remedy for coughs—Fl. July—September. Perennial.

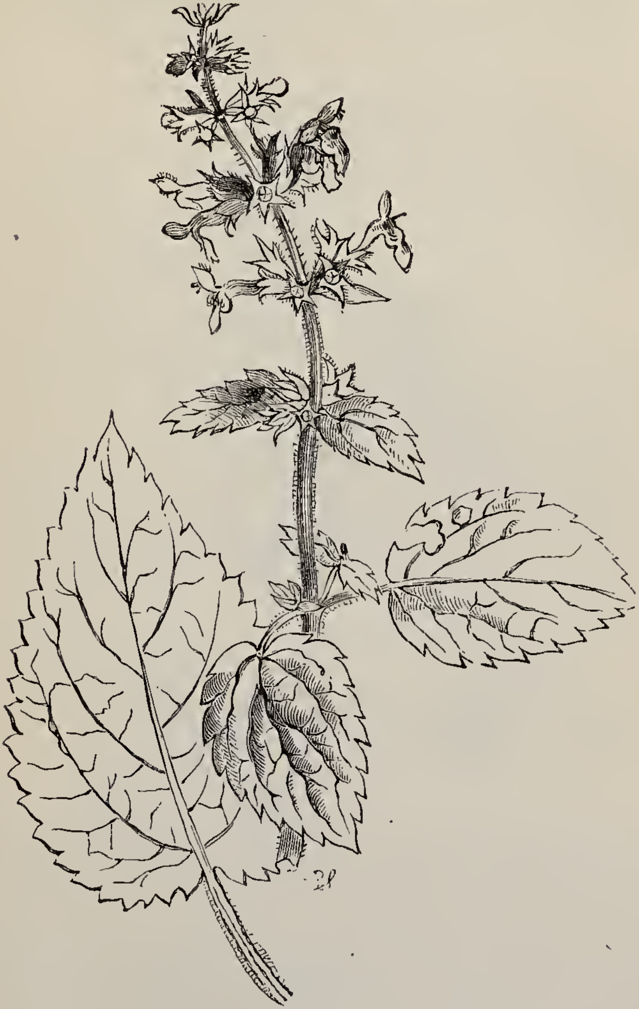
13. STÁCHYS (Woundwort).—Herbs or shrubs with their *flowers* usually in terminal spikes; *calyx* sub-campanulate, 5—10-ribbed, with 5 equal teeth; *corolla* with tube as long as the calyx; *upper lip* arched, *lower* 3-lobed, the side lobes bent back before withering; *stamens* 4, the 2 lower the longest; *anthers* bursting lengthwise. (Name from the Greek *stachús*, an ear of corn, from the spike-like inflorescence.)

1. *S. Betónica* (Wood Betony).—A common and very pretty woodland plant, 1—2 feet high, with a slender, seldom branched *stem;* characteristically shaped oblong, obtuse, cordate, deeply crenate *leaves*, of which the lower ones are stalked; and an interrupted terminal oblong *head* or *spike* of deep crimson, rose-coloured, or rarely white *flowers* with 2 or 3 pairs of sessile leaves beneath the lower whorls.—Fl. June—August. Perennial.

2. *S. germánica* (Downy Woundwort).—*Stem* erect, woolly, 2—3 feet high; *leaves* with matted, white, silky hairs, wrinkled, cordate, the *lower* stalked, ovate-oblong, the *upper* sessile, lanceolate; *flowers* rose-colour, in interrupted, dense, many-flowered whorls.—On a chalky soil; very rare.—Fl. July, August. Biennial.

3. *S. alpína* (Hill Woundwort).—Stem erect, little branched, velvety, glandular at the top, 1—2 feet high, herbaceous; *leaves* oval-lanceolate, cordate, distinctly and regularly crenate-serrate, acuminate, velvety on both sides, green above, paler beneath; the *lower* long-stalked, the *upper* sessile; *flowers* purple, 5—12 in each axil, in a distantly interrupted spike; *bracteoles* linear-lanceolate, nearly as long as the calyx, reflexed, velvety; *calyx* bell-shaped, with

slightly unequal teeth and glandular hairs; *corolla*



STÁCHYS SYLVÁTICA (*Hedge Woundwort*).

woolly outside, longer than the calyx, spotted; *upper* *lip* obovate, obtuse, bearded at the apex; *lower lip* emarginate; *nutlets* large, brown, smooth.—Woods on calcareous soil; found in Gloucestershire, in 1897, by Mr. Cedric Bucknall.—Fl. July, August. Perennial.

4. *S. palústris* (Marsh Woundwort).—*Stem* erect, stout, hollow, 1—3 feet high, hairy; *leaves* linear-lanceolate, acute, crenate-serrate, the *lower* shortly-stalked; *flowers* dull light red, in a long, terminal, interrupted spike of 6—10-flowered whorls.—Marshes; common.—Fl. July—September. Perennial.

5. *S. sylvática* (Hedge Woundwort).—A similar species, but more coarsely hairy, with solid *stem*; *leaves* all stalked, ovate-acuminate, cordate, coarsely serrate; *flowers* dull dark red.—Woods and hedges; common.—Fl. July, August. Perennial.

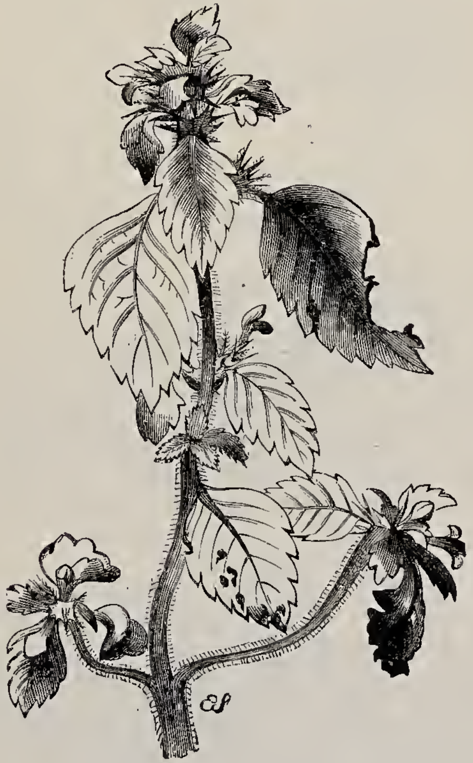
6. *S. arvénsis* (Corn Woundwort).—A smaller, more slender, slightly hairy species, with *stem* spreading; ascending *branches*, 6—18 in. high; ovate, obtuse, crenate *leaves*; *flowers* pale pink, very small, 4—6 in a whorl; *corolla* scarcely longer than the calyx; *nutlets* warty.—Cornfields and other cultivated ground; an abundant weed.—Fl. April—November. Annual.

7.* *S. ánnua*, with its *upper leaves* lanceolate and *flowers* yellowish, has occurred in cornfields in Kent.—Fl. August, September. Annual.

14. GALEÓPSIS (Hemp-nettle).—Herbs with spreading *branches*; serrate *leaves*; *flowers* in dense, many-flowered axillary and terminal whorls; *calyx* bell-shaped, with 5 prickly teeth, 5-ribbed; *corolla* with an inflated throat; *upper lip* arched; *lower* 3-lobed, with 2 erect teeth on its upper side; 2 lower *stamens* the longest; *anthers* exserted, fringed, bursting transversely. (Name from the Greek *galé*, a weasel, *ópsis*, resemblance.)

1. *G. intermédia* (Rare Red Hemp-nettle).—A

softly pubescent plant, 6—18 in. high, with many ascending *branches*, and the *stem* not thickened at its nodes; *leaves* ovate-lanceolate, serrate throughout; *flowers* rose-red, in separate whorls; *corolla-tube* equalling the calyx.—Cultivated ground; a rare casual.—Fl. July—October. Annual.



GALEÓPSIS TÉTRAHIT (*Common Hemp-nettle*).

2. *G. angustifólia* (Common Red Hemp-nettle).—An allied species, with narrower, linear-lanceolate *leaves*, only partially serrate, the upper *whorls of flowers* not separate, and the *corolla-tube* much longer

than the calyx.—Gravelly and sandy cornfields; not uncommon.—Fl. July—October. Annual.

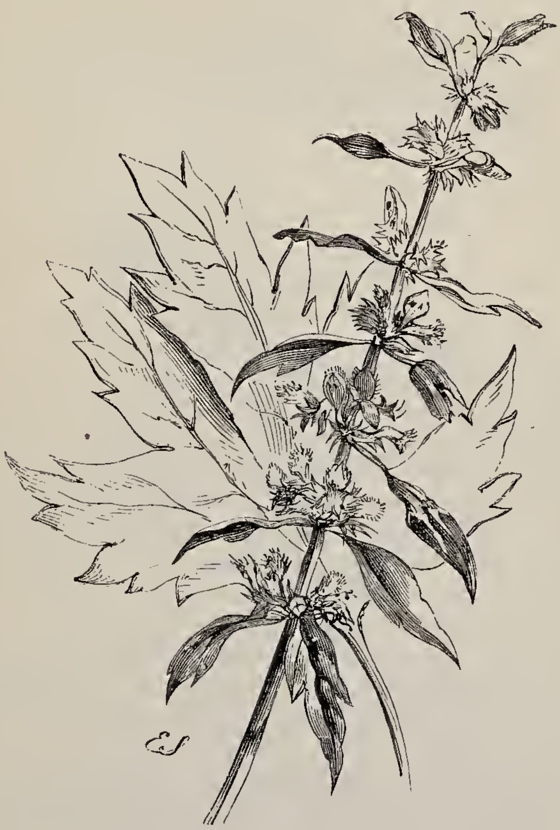
3. *G. ochroléuca* (Downy Hemp-nettle).—A very similar plant, but with gland-tipped hairs on its upper part; ovate-lanceolate, deeply serrate, soft, downy *leaves;* and large, pale yellow *flowers.*—Sandy cornfields; rare.—Fl. July, August. Annual.

4. *G. versícolor* (Large-flowered Hemp-nettle).—A large, stout, hispid plant, 2—3 feet high, with *stem* swollen at its nodes; *leaves* long stalked, oblong-ovate, acuminate, coarsely serrate; *corolla* large, yellow, usually with a broad red spot on the lower lip, *tube* much longer than the calyx, *upper lip* arched, as broad as long.—Cornfields; frequent.—Fl. July, August. Annual.

5. *G. Tétrahit* (Common Hemp-nettle).—A closely-allied species, not reaching so great a height, with more strongly ribbed *calyx*, with teeth as long as its tube, and a smaller, generally rose-colour and white *corolla*, its *tube* not longer than the *calyx*, and its *upper lip* flatter and longer than it is broad.—Cornfields; common.—Fl. July—September. Annual.

*15. LEONÚRUS (Motherwort).—Erect, herbaceous, plants, with lobed *leaves;* dense, distant, axillary whorls of small *flowers; calyx* bell-shaped, with 5 prickly, spreading teeth; *corolla* with the upper lip nearly flat, very hairy above; *anthers* sprinkled with hard, shining dots, bursting lengthwise. (Name from the Greek *león*, a lion, *oúra*, a tail, from some fancied resemblance in the plant.)

1.* *L. Cardíaca* (Common Motherwort).—Distinguished from all British plants of the Order by its radical *leaves*, which are on long, slender stalks, and are deeply palmately 3—5-lobed. The *stem* is 2—4 feet high, branched mainly below, and very leafy. The upper *leaves* are narrow and entire, or nearly so, and, when not in flower, the plant resembles Mugwort (*Artemísia vulgáris*) in habit. The *flowers* are



LEONÚRUS CARDÍACA (*Common Motherwort*).

pink, and their whorls of prickly *calyces* are conspicuous.—Hedges and waste places; rare and not indigenous.—Fl. July—September. Perennial.

16. LÁMIUM (Dead-nettle).—Hairy herbs with

leaves so closely resembling those of the Stinging Nettles that many persons are afraid to handle them, though the square *stems* in the case of the Dead-nettles, and the small, green flowers in spiked clusters in that of the Stinging Nettles, are sufficient to distinguish them from one another. The Dead-nettles have their *flowers* in many-flowered whorls in the axils of leafy *bracts ; calyx* tubular or bell-shaped, 5-toothed ; *corolla* with an inflated *throat*, arched *upper lip*, 3-lobed *lower lip ; stamens* 4, the 2 lowest the longest ; *anthers* generally hairy, bursting lengthwise. (Name from the Greek *laimos*, the gullet, from the shape of the corolla.)

1. *L. amplexicaúlé* (Henbit-nettle).—*Stem* 4—10 in. high, branched from the base ; *lower leaves* long-stalked, roundish, deeply cut ; *upper* sessile, amplexicaul, kidney-shaped ; *flowers* crimson, in distant whorls ; *calyx* small, very downy, with teeth converging in fruit ; *corolla* with long, slender tube.—Dry waste places ; common.—Fl. May—August. Annual.

2. *L. intermédium* (Intermediate Dead-nettle).—Intermediate between the preceding species and *L. purpúreum*, but most resembling the former ; stouter and more succulent ; *calyx* slightly hairy, *teeth* much longer than the tube, not converging in fruit ; *corolla-tube* only slightly longer than the calyx.—Cultivated ground, chiefly in Scotland.—Fl. June—September. Annual.

3. *L. hýbridum* (Cut-leaved Dead-nettle).—More nearly allied to *L. purpúreum ; stem* 6—18 in. high ; *leaves* all stalked, incise-dentate, the *lower* cordate, the *upper* wedge-shaped at the base ; *flowers* red, in crowded, sub-terminal whorls ; *calyx-teeth* about as long as the tube ; *corolla-tube* not longer than the calyx.—Waste places ; frequent.—Fl. April—October. Annual.

4. *L. purpúreum* (Red Dead-nettle).—*Stem* 6—18 in. high ; *leaves* all stalked, crenate, blunt, cordate or

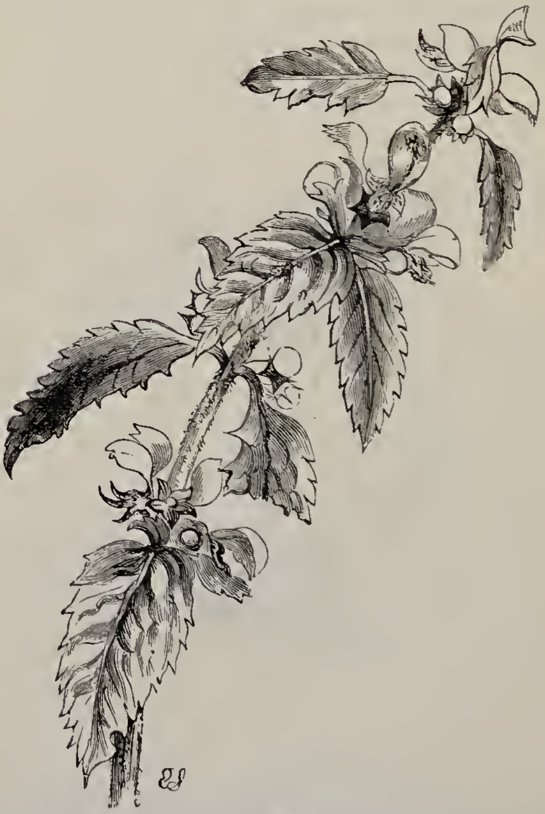
kidney-shaped, commonly tinged with red, the *upper* ones crowded; *flowers* small, red, or rarely white, in crowded, sub-terminal whorls; *calyx-teeth* about as long as the tube; *corolla-tube* longer than the calyx.—A very common weed in cultivated ground, and by waysides.—Fl. April—October. Annual.

5.* *L. maculátum* (Spotted Dead-nettle).—Most closely allied to the following; *stem* 6—18 in. high; *leaves* all stalked, cordate, ovate, much wrinkled, deeply serrate, and almost always with a white stripe down the middle; *flowers* large, rose-colour, rarely white; *calyx-teeth* broad, recurved, as long as the tube; *corolla-tube* longer than the calyx, and abruptly dilating at the throat.—Waste places; an escape from cultivation.—Fl. June—September. Perennial.

LÁMIUM PURPÚREUM (*Purple Dead-nettle*).

6. *L. álbum* (White Dead-nettle).—A common but

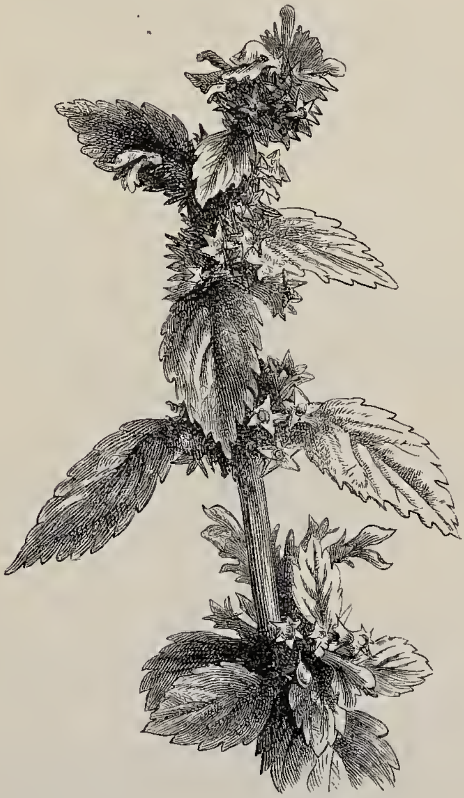
not inelegant weed, 6—18 in. high ; *leaves* all stalked, cordate, ovate, acuminate, deeply serrate, sometimes blotched with white ; *flowers* large, white ; *calyx-teeth*



LÁMIUM GALEÓBDOLON (*Yellow Weasel-snout, Archangel, Yellow Dead-nettle*).

narrow, straight, with long, slender points as long as the tube ; *corolla-tube* longer than the calyx, and gradually dilating upwards ; *anthers* black.—Hedges and waste ground ; abundant.—Fl. May—December. Perennial.

7. *L. Galeóbdolon* (Yellow Dead-nettle, Weasel-snout, Archangel). — Resembling the White Dead-nettle in habit, but rather taller and more slender;



BÁLLOTA NÍGRA (*Black Horehound*).

leaves ovate, acuminate, coarsely serrate; *flowers* yellow, with red spots on the lower lip, in distant, 6—10 flowered whorls, large and handsome; *anthers* smooth.—Copses; frequent.—Fl. May, June. Perennial.

17. Bállota (Black Horehound).—Hairy, herbaceous plants, with small *flowers* in dense, axillary whorls, with leafy *bracts; calyx* funnel-shaped, with 5 equal, broad, spreading, prickly teeth; *corolla* unequally 2-lipped, *upper lip* erect, concave, *lower* 3-lobed, the middle lobe largest, heart-shaped; *stamens* 4, the 2 lower the longest; *anthers* exserted, smooth, bursting lengthwise. (Name in Greek signifying *rejected*, from the offensive smell.)

1. *B. nígra* (Black Horehound).—The only British species, a tall, bushy plant, hairy with reflexed hairs, much branched; *leaves* stalked, ovate-cordate, downy, wrinkled, crenate; *flowers* numerous, light red, in numerous distant, 6—12 flowered whorls.—Waste ground; frequent. The odour of the whole plant is particularly strong and offensive.—Fl. July, August. Perennial.

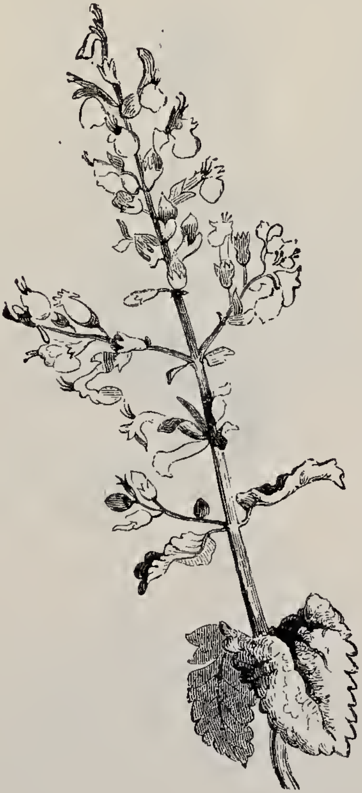
18. Teúcrium (Germander).—Herbaceous plants with *flowers* in whorls of 2—6, the upper ones in loose, terminal, 1-sided racemes; *calyx* tubular, 5-toothed; *corolla* with short *tube*, *upper lip* small, deeply 2-cleft, *lower lip* 3-cleft, the middle lobe much the largest; *stamens* 4, parallel, the 2 upper shorter; *nutlets* united, generally wrinkled. (Name from *Teucer*, who is said to have been the first to use it in medicine.)

1. *T. Bótrys* (Cut-leaved Annual Germander).—A downy, glandular plant with long hairs; *stem* erect, 4—8 in. high, much branched from the base; *leaves* all stalked, ovate, pinnatifid, into 7—11 linear, obtuse segments; *flowers* rose-colour, in axillary, 4—6-flowered whorls; *calyx* large, inflated, pouched at the base.—Chalky fields in Surrey; very rare.—Fl. August, September. Annual.

2. *T. Scórdium* (Water Germander).—A hairy plant with creeping *rhizome* and *runners; branches*

4—10 in. high; *leaves* sessile, oblong, coarsely serrate; *flowers* rose-colour, in distant axillary, 2—6-flowered whorls; *calyx* scarcely pouched.—Wet places; rare. —Fl. July, August. Perennial.

3.* *T. Chamædrys* (Wall Germander).—A similar but rather larger, much-branched plant, woody below, with stalked, ovate, cuneate, incised-crenate *leaves*, the upper ones smaller and nearly entire; *flowers* large, handsome rose-colour, in whorls of 5—6, the upper



TEÚCRIUM SCORODÓNIA (*Wood Germander, Wood Sage*).

ones in terminal, leafy, 1-sided racemes; *calyx* hardly pouched.—Old walls; rare. Formerly employed as a tonic; but now scarcely used, except by rustic practitioners.—Fl. July—September. Perennial.

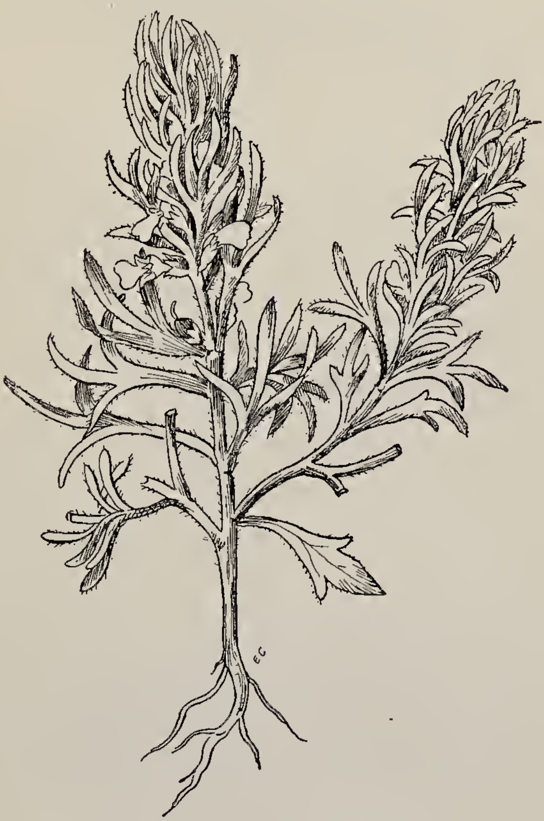
4. *T. Scorodónia* (Wood Germander, Wood Sage). —*Stem* erect, about 2 feet high, with stalked, ovate, cordate, crenate, wrinkled, sage-like *leaves*; and lateral and terminal, 1-sided, racemose clusters of small, yellowish-white *flowers*; *calyx* pouched at the base.—A common woodland plant. The whole plant is very bitter, and has been used as a substitute for hops.—Fl. June—September. Perennial.

ÁJUGA RÉPTANS (*Common Bugle*).

19. ÁJUGA (Bugle).—Herbs with leafy *bracts*; *calyx* ovoid, 5-cleft; *corolla* with a long *tube*, the *upper*

lip very short, notched, *lower* 3-cleft, the middle lobe broader and notched; *nutlets* united, wrinkled. (Name said to be corrupted from the Latin *Abiga.*)

1. *A. réptans* (Common Bugle).—Well marked by



ÁJUGA CHAMÆPITYS (*Ground Pine*).

its solitary erect *stem*, 6—9 in. high, with long, creeping *runners*; *lower leaves* stalked, obovate, obtuse, almost glabrous; *upper leaves* sessile, tinged with blue; *flowers* blue, or rarely white, in 6—10-flowered whorls, the upper of which are crowded into a spike. —Moist meadows and woods; common.—Fl. May, June. Perennial.

2. *A. pyramidális* (Pyramidal Bugle).—A hairy plant with underground *offsets* and short *runners* not produced until autumn ; *leaves* gradually diminishing upward ; *flowers* blue, all crowded into a 4-sided pyramidal spike.—By mountain streams in the north-west ; very rare.—Fl. May—July. Perennial.

3. *A. Chamæpitys* (Ground Pine).—Very different in appearance from any other British plant in the Order, a hairy, tufted, herbaceous plant, 3—6 inches high, with branched, spreading, reddish-brown, viscid, turpentinous *stem* ; hairy *leaves* divided almost to the base into 3 linear segments; and solitary, axillary, yellow *flowers*, with red spots on the lower lip of the corolla.—Chalky fields in the south-east; rare. —Fl. May—August. Annual.

ORD. LX. PLANTAGÍNEÆ.—PLANTAIN FAMILY.

A small Order of herbaceous plants of humble growth, with many, usually radical, ribbed or fleshy *leaves*. The *flowers*, which, being mostly wind-pollinated, are conspicuous from their long stamens, grow in spikes and are polysymmetric ; the *calyx* 4-parted, imbricate, persistent ; *corolla* 4-parted, chaffy, imbricate ; *stamens* 4, alternate with the segments of the corolla, and having very long, thread-like, exserted *filaments*, and large, versatile *anthers* ; *ovary* superior, 1-, 2-, or rarely 4-chambered ; *style* 1, slender ; *stigma* hairy ; *fruit* a capsule splitting transversely or not at all ; *seeds* 1, 2, or many in each chamber. Several species in the Order are common in Great Britain as wayside, meadow, and maritime plants, and some of them are almost world-wide in their distribution. The seeds abound in a tasteless mucilage, which has been used as a substitute for Linseed in medicine, and to stiffen muslin.

1. Plantágo.—Terrestrial plants with perfect *flowers* in spikes.

2. Littorélla.—Waterside plants with *stamens* and *carpels* in different flowers; *staminate flowers* solitary, stalked; *carpellate flowers* sessile.

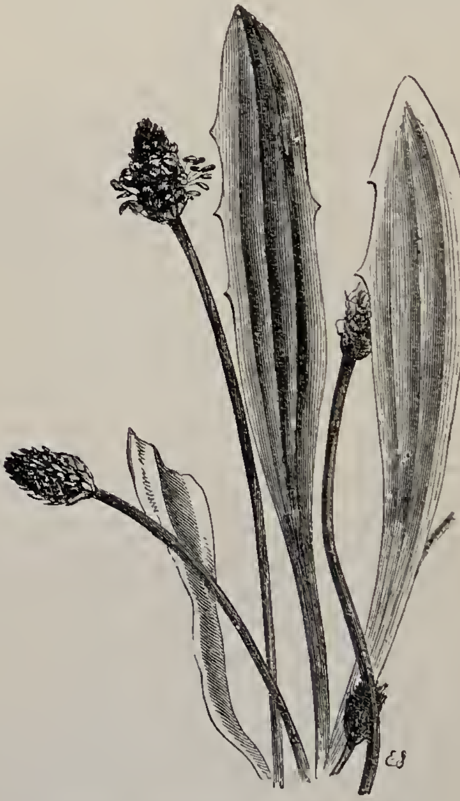
1. Plantágo (Plantain). — Terrestrial herbs with perfect *flowers* in spikes; *calyx* 4-cleft, the segments reflexed; *corolla* tubular, with 4 spreading lobes; *stamens* 4, very long; *ovary* 2—4-chambered; *capsule* splitting all round. (Name, the Classical Latin name.)

1. *P. májor* (Greater Plantain, Way-bread).—*Leaves* radical, ascending, broadly oblong, on long, channelled stalks, 3—7-ribbed; *flowers* in a very long, tapering spike, on a short, cylindrical stalk; *anthers* purple; *capsule* 2-chambered, 8—16-seeded.—Borders of fields and waysides; abundant. Well known for its spikes of fruit, the seeds in which are a favourite food of cage-birds.—Fl. May—September. Perennial.

2. *P. média* (Hoary Plantain, Lamb's-tongue).—*Leaves* downy, broadly elliptical, on short, flat stalks, lying so close to the ground as to destroy all vegetation beneath, and even to leave the impression of their 5—9 ribs on the ground; *flowers* in a close, cylindrical spike, shorter than that of *P. major*, but on a longer, cylindrical, downy peduncle, fragrant, and conspicuous from their lilac *bracts*, and *filaments*, and cream-coloured *anthers; capsule* 2-chambered, 2-seeded.—Meadows on a dry soil; common.—Fl. June —October. Perennial.

3. *P. lanceoláta* (Ribwort Plantain). — *Leaves* nearly glabrous, ob-lanceolate, tapering downwards, slightly and irregularly toothed, 3—6-ribbed, erect; *flowers* in a short, ovoid or cylindric spike, on a long, angular stalk; *bracts* and *sepals* black-tipped; *fila-*

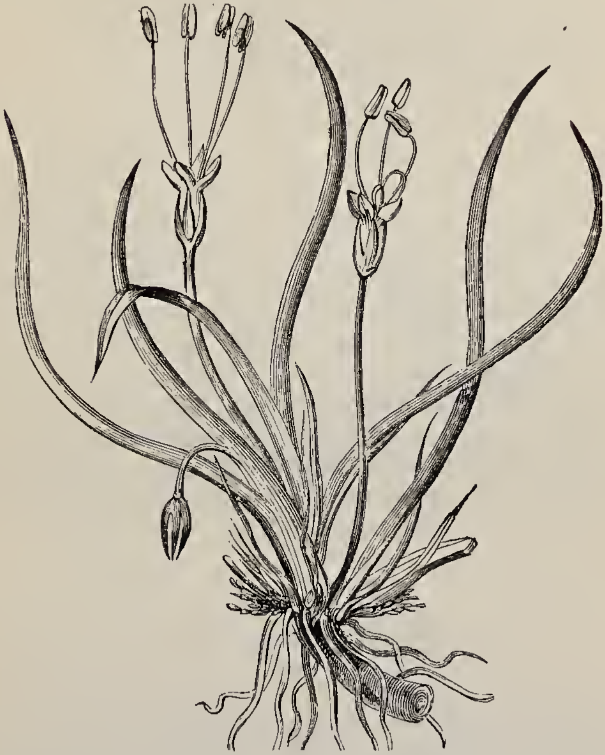
ments and *anthers* white; *capsule* 2-chambered, 2-seeded.—Meadows; abundant. Under the name of *Cocks and Hens* this plant is well known to children, who amuse themselves by striking the heads one against another until the stalk breaks.—Fl. May—October. Perennial.



PLANTÁGO LANCEOLÁTA (*Ribwort Plantain*).

4. *P. marítima* (Seaside Plantain).—Easily distinguished from the rest of the genus by its long, linear, grooved, fleshy, 3—5-ribbed *leaves*, which are

woolly at the base; the *flower-spike* is cylindrical and varies in length, as does its cylindrical stalk; *stamens* pale yellow; *capsule* 2-chambered, 2-seeded. — Sea-shores and tops of mountains; common.—Fl. June—September. Perennial.



LITTORÉLLA JÚNCEA (*Shore-weed*).

5. *P. Corónopus* (Buck's-horn Plantain). — The only British species with divided *leaves*. They are linear and usually pinnatifid, and more or less downy; the *flower-spike* is slender; *stamens* pale yellow; *capsule* 3—4-chambered, 3—4-seeded.—Gravelly places,

especially near the sea; common.—Fl. June—August. Annual or biennial.

6.* *P, arenária* (Sand Plantain), a downy, branching, leafy plant, with sessile, linear *leaves*, and an ovoid *spike* on a long stalk, has occurred casually on sand-hills in Somerset and Jersey.

2. LITTORÉLLA (Shore-weed).—A genus comprising only the one species, *L. júncea*, which is not unlike *Plantágo marítima* in habit; but has *runners*, and when under water forms a matted turf. Its *leaves* are all radical, linear, fleshy, flat above and curved beneath, and nearly glabrous. The solitary *staminate flowers* each rise on a *peduncle* 2—4 in. high, have 4 *sepals*, a tubular, 4-lobed *corolla*, and 4 long, exserted *stamens* with large *anthers*. The 2 or 3 *carpellate flowers*, sessile among the leaves, have 3—4 *sepals*, an urceolate, 3—4 lobed *corolla*, and a 1-chambered, 1—2 ovuled *ovary* with a long stiff *style*.—Marshes and lake-margins; common. (Name from the Latin *littus*, a shore.)—Fl. June—September. Perennial.

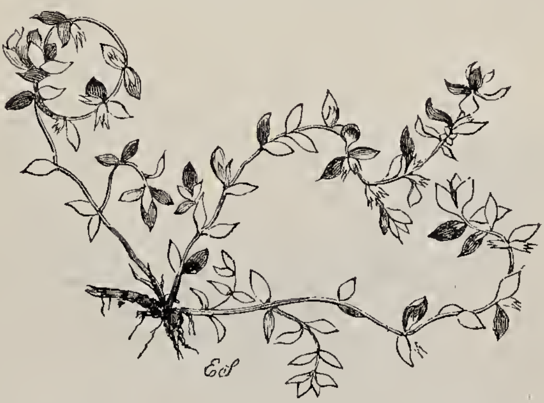
ORD. LXI. ILLECEBRÁCEÆ.—THE KNOT-GRASS FAMILY.

A small Order of small, branching, often tufted, herbaceous plants, mostly natives of warm, dry climates. A few only are found so far north as Great Britain, and nearly all of these are confined to our southern counties. They have simple, sessile *leaves*, generally entire and with membranous *stipules*; minute, perfect, and cymosely arranged *flowers*; *sepals* usually 5, sometimes 4, persistent, and closing over the fruit; *petals* 5, minute, alternating with the sepals, sometimes wanting; *stamens* 1—10, opposite the petals when equalling them in number; *ovary* superior, 1-chambered, 1-ovuled ; *style* 2—3-fid ; *fruit* enclosed in the calyx, dry, indehiscent, 1-seeded.

1. Illécebrum. — *Leaves* opposite, not connate ; *sepals* white, with long points ; stigmas 2.

2. Herniária. — Leaves scattered and opposite, not connate ; *sepals* green, blunt ; *stigmas* 2.

3. Corrigíola.—*Leaves* scattered ; *sepals* green, blunt, united at the base ; *stigmas* 3.



ILLÉCEBRUM VERTICILLÁTUM (*Whorled Knot-grass*).

4. Scleránthus.—*Leaves* opposite, connate ; *sepals* 4—5, united ; petals absent ; *stigmas* 2—4.

1. Illécebrum (Knot-grass).—A genus containing only the one species *I. verticillátum* (Whorled Knot-grass), is a pretty little glabrous plant, with slender, tangled, prostrate *stems*, of a red tint, glaucous, sessile, ovate *leaves*, and axillary whorls of white *flowers*, remarkable for their thickened white *sepals* terminating in a long, soft point.—In boggy ground and standing water, among other aquatic plants ; not uncommon in Cornwall, but much rarer in Devonshire. (Name from the Latin *illécebra*, an attraction.) —Fl. July—September. Perennial.

2. Herniária (Rupture-wort). — Small, prostrate plants with narrow, opposite, and scattered *leave ;* crowded, minute, axillary, green *flowers ; sepals* 4—5, united, blunt, green; *petals* 4—5, resembling barren filaments, or absent; *stamens* 3—5, inserted on a fleshy ring; *stigmas* 2, nearly sessile. (Name from the disease for which these plants were formerly supposed to be a remedy.)

1. *H. glábra* (Smooth Rupture-wort). — A small, prostrate plant, with much of the habit of Wild Thyme; *stems* herbaceous, with minute decurved hairs; *leaves* oblong, pale yellowish-green, glabrous; *flowers* green, sessile, axillary, collected into a leafy spike.—Sandy soils, mostly in the eastern counties; rare.—Fl. July—September. Annual or biennial.

2. *H. ciliáta* (Fringed Rupture-wort).—A stouter plant, forming larger tufts, with minute, decurved hairs on the upper side only; *leaves* broader, orbicular, fringed, dark green; *flowers* larger, in distant clusters. —The Lizard, Cornwall; and Guernsey; very rare.—Fl. July August. Perennial.

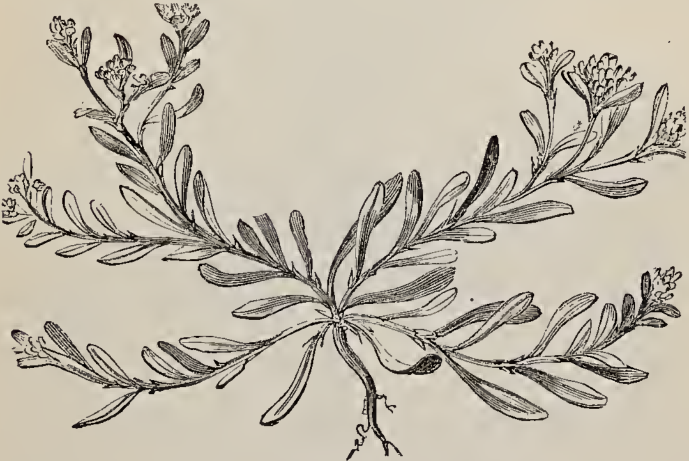
3.* *H. hirsúta* (Hairy Rupture-wort).—*Leaves* elliptic-oblong, covered all over with straight, spreading hairs.—Sandy ground at Christchurch, Hampshire.—Fl. July, August. Annual.

3. Corrigíola (Strapwort).—Prostrate, glabrous plants, with scattered *leaves* with membranous *stipules ; flowers* minute, *sepals* 5, green, blunt, united at the base, with membranous margins; *petals* 5, as long as the sepals, white; *stamens* 5, *stigmas* 3, sessile. (Name a diminutive from the Latin *corrigia*, a strap, from the shape of the leaves.)

1. *C. littorális* (Sand Strapwort).—A small but pretty plant with slender, spreading *stems*, which lie quite prostrate; linear-lanceolate, glaucous *leaves ;* and crowded, terminal cymes of small, white *flowers.*—

Sandy shores, Start Bay, Devon, and Loe Pool, near Helston, Cornwall; very rare.—Fl. July—October. Annual.

4. Scleránthus (Knawel).—Small, inconspicuous weeds, with wiry, much-branched *stems;* opposite, connate, awl-shaped *leaves* without stipules; and small, green *flowers* in axillary and terminal fascicles; *perianth* tubular, 4—5-cleft, with membranous margins to its segments; *stamens* 1—10; *ovary* superior, 1-chambered, 1-ovuled; *stigmas* 2—4; *fruit* enclosed within the hardened perianth-tube. (Name from the Greek *scléros*, hard, *anthos*, a flower, from the hardness of the perianth.)

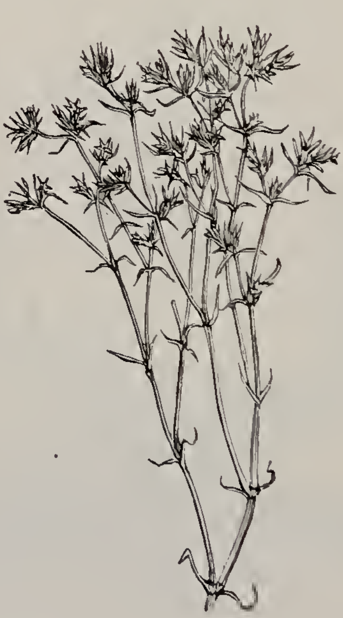


CORRIGÍOLA LITTORÁLIS (*Sand Strapwort*).

1. *S. ánnuus* (Annual Knawel).—A small plant, 2—8 in. high, with numerous, much-branched, tangled *stems*; awl-shaped *leaves*, green *flowers* in clusters either in the forks of the stems or terminal *sepals* acute, with a narrow, whitish, membranous margin, spread-

ing when in fruit.—Sandy fields; common.—Fl. June —November. Annual or biennial.

2. *S. perénnis* (Perennial Knawel).—A prostrate, glaucous plant, becoming reddish, with slightly-branched *stem; sepals* blunt, with a broad, white margin.—Sandy fields in the south; very rare. Perennial.



SCLERÁNTHUS ÁNNUUS (*Annual Knawel*).

SUB-CLASS III. INCOMPLÉTÆ.

Flowers having a calyx or corolla, or neither; but never both. In this Sub-Class it is often doubtful whether the leaves which enclose the stamens and carpels of a flower should be called a *calyx* or *corolla*: the term *perianth* (from the Greek *peri*, around, and *anthos*, a flower) is therefore used to denote these organs, and must be taken to mean all the leaves, whether resembling sepals or petals, which enclose the other parts of the flower. Used in this sense, and applied to the preceding Sub-Classes, the calyx and corolla would be correctly called a *double perianth.*

SERIES I. MONOCHLAMÝDEÆ.

Flowers generally with a perianth of one whorl.

§ Ovary superior.

ORD. LXII. AMARANTHÁCEÆ.—AMARANTH FAMILY

A considerable Order of weedy plants, mostly tropical, with exstipulate *leaves*; membranous *flowers*; a persistent, 3—5-partite *perianth; ovary* superior, 1-chambered.—Several members of the Order have brightly coloured perianths which render them garden favourites, such as *Amaránthus caudátus* (Love-lies-bleeding), *A. hypochondríacus* and *A. speciósus* (Prince of Wales' Feather) and *Celósia cristáta* (Cock's-comb).—None of them are indigenous to Great Britain; but two species of Amaranth occur as casuals.

*1. AMARÁNTHUS (Amaranth).—*Flowers* monœcious; *stamens* 3—5; *stigmas* 3; *capsules* 1-chambered, 1-seeded. (Name in Greek signifying *everlasting flower.*)

1.* *A. retrofléxus.*—*Stem* erect, branched; *flowers* 5-merous; *stamens* 5; *bracts* membranous, awl-shaped, longer than the *fruit.*—Waste places near towns.—Fl. August. Annual.

2.* *A. Blítum.*—*Stem* straggling, smooth, 1—2 feet high; *leaves* ovate, long-stalked; *flowers* 3-merous, in small, lateral clusters, and a small, leafless, terminal spike; *stamens* 3.—Waste places near towns.—Fl. August. Annual.

ORD. LXIII. CHENOPODIÁCEÆ.—GOOSE-FOOT FAMILY.

A considerable Order of herbaceous and somewhat shrubby plants, common weeds in many temperate climates and most abundantly represented in salt marshes and on the sea-shore. They have scattered, simple, extipulate *leaves* which are more or less inclined to be fleshy; and small and inconspicuous, polysymmetric, sometimes monœcious or diœcious *flowers*. The *perianth* is 3—5-lobed, imbricate and persistent, decidedly partaking of the characters of a calyx, and sometimes, as in *Átriplex*, with a tendency to become enlarged in the fruiting stage. The *stamens* are 5, rarely 1 or 2, springing from the base of the perianth and opposite its lobes; *ovary* superior or half-inferior, 1-chambered, 1-ovuled; *style* 2 or 4-cleft, rarely simple; *stigmas* undivided; *fruit* dry and indehiscent, enclosed in the perianth. Many of the plants of this Order are important articles of food for cattle or for human beings. *Béta marítima*, a common sea-shore weed, is believed to be the origin of the cultivated Mangold Wurzel, the White or Sugar Beet so extensively cultivated in Germany and France for making sugar, and the Red Beetroot, which is eaten as a salad. *Spinácia oleráceа*, supposed to be a native of Western Asia, the leaves of which contain a large proportion of saltpetre, has long been cultivated as an esculent under the name of Spinach; but the leaves of the Garden Orache (*Átriplex horténsis*), of the Australian Spinach (*Chenopódium auricomum*), of the Beet, and of other plants are used in the same way.

1. CHENOPÓDIUM.—*Leaves* flat; *flowers* perfect; *perianth* remaining unaltered and not adhering to the *fruit*.

2. Béta.—*Leaves* flat; *flowers* perfect; *fruit* adhering to the fleshy *perianth-tube.*

3. Átriplex.—*Leaves* flat; *flowers* imperfect; *perianth* enlarging, but generally not adhering to the *fruit.*

4. Salicórnia.—Jointed, leafless plants; *flowers* perfect; *perianth* fleshy.

5. Suǽda.—*Leaves* semicylindric; *flowers* perfect; *perianth-segments* not keeled or winged.

6. Sálsola.—*Leaves* awl-shaped; *flowers* perfect; *perianth-segments* developing a broad, transverse, dorsal wing.

1. Chenopódium (Goose-foot).—Very variable and therefore difficult plants; *stem* angular; *leaves* flat, often triangular, entire or lobed; *flowers* minute, perfect, in axillary or panicled clusters; *perianth* deeply 3—5-cleft, remaining unaltered, closing over the fruit; *stamens* 2—5; *stigmas* 2—3. (Name from the Greek *chén*, a goose, *pous*, a foot.)

* *Leaves undivided; flowers 5-merous.*

1. *C. polyspérmum* (Many-seeded Goose-foot).—A glabrous species, varying in size from 4 to 18 in. high, usually tinged with red; *stem* branched, spreading; *leaves* nearly sessile, ovate-elliptic; *flowers* in branched, slender spikes; *seeds* flattened horizontally, shining, minutely dotted.—Waste ground; not common. A not inelegant plant, the numerous *fruits* not being concealed by the perianths.—Fl. August—October. Annual.

2. *C. Vulvária* (Stinking Goose-foot).—Distinguished by the extremely disgusting fishy smell of the greasy meal with which the plant is covered; *stem* spreading; *leaves* ovate-rhomboid, fleshy; *flowers* in small, dense spikes.—Waste places; not common.—Fl. August, September. Annual.

** *Leaves toothed or lobed ; flowers* 5-*merous.*

3. *C. álbum* (Fat Hen, White Goose-foot).—Perhaps the commonest species of the genus, 1—3 feet high, succulent, and covered with a white meal ; *leaves* ovate-rhomboid, bluntly toothed, *upper* ones narrow, entire ; *flowers* in branched, dense, clustering spikes, leafy below.—Waste places and cultivated ground ; very common.—Fl. July—September. Annual.

*4. *C. opulifólium* (Guelder-rose-leaved Goose-foot).—A species which is not indigenous, with rounded, obtuse, dentate *leaves ;* leafless clusters of *flowers ;* and large, smooth, shining *seeds.*

5. *C. ficifólium* (Fig-leaved Goose-foot).—An erect, mealy plant, with limp, oblong-hastate, cuneate, toothed *leaves*, and *flowers* in a spike, with erect branches, leafy at the base only.—Cultivated ground in the East of England ; rare.—Fl. August, September. Annual.

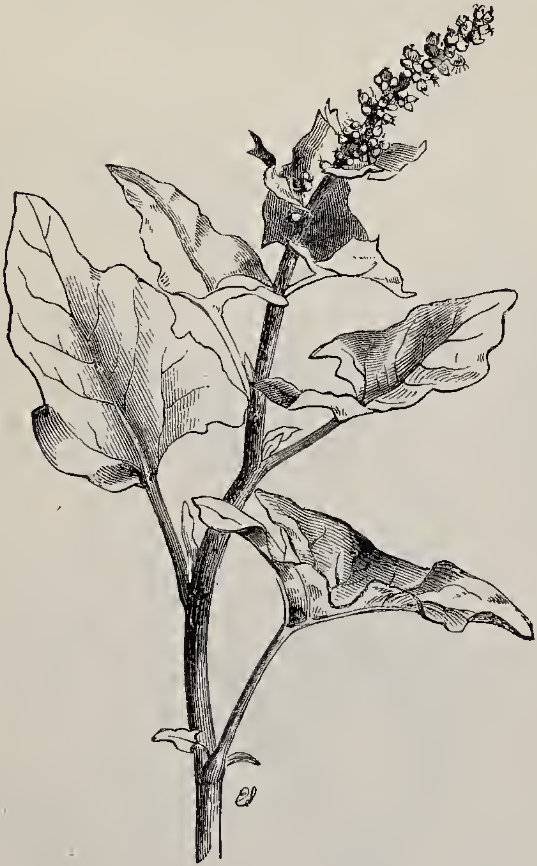
6. *C. murálé* (Sowbane, Nettle-leaved Goose-foot).—A nearly glabrous, fetid species, with rhomboid-ovate, unequally-serrate *leaves*, and *flowers* in short, densely panicled spikes with spreading branches.—Waste ground, near houses ; uncommon.—Fl. August, September. Annual.

7. *C. hýbridum* (Maple-leaved Goose-foot).—A large, stout, branched, nearly glabrous species with a heavy odour ; *leaves* large, cordate, acuminate, with 2—4 large, broad teeth on each side ; *flowers* in leafless, axillary, corymbose clusters.—Waste places, chiefly in Southern England ; rare.—Fl. August, September. Annual.

8. *C. úrbicum* (Upright Goose-foot).—Another large, stout, but little branched, slightly mealy species, with triangular, cuneate, toothed *leaves*, and *flowers* in small, distant, crowded clusters on an erect spike.—Waste places in the south ; uncommon.—Fl. August—October. Annual.

*** *Leaves mostly toothed; terminal flower only in each cluster 5-merous.*

9. *C. rúbrum* (Red Goose-foot).—A tall, erect, leafy, smooth and shining species, with triangular, irregularly toothed *leaves*, and *flowers* in short spikes in leafy


CHENOPÓDIUM BONUS-HENRÍCUS (*Good King Henry*).

panicles.—Waste places and salt marshes; frequent. —Fl. August, September. Annual.

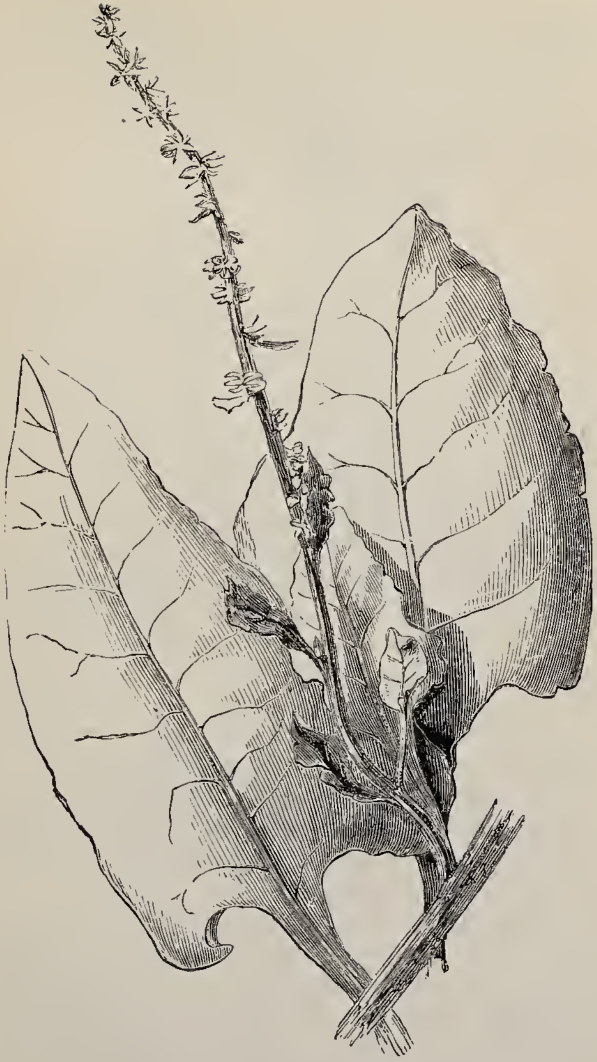
10. *C. botryódes* (Many-spiked Goose-foot).—A small, succulent, brittle plant, 4—5 in. high, with triangular, scarcely toothed, fleshy *leaves*, and *flowers* in dense panicles, leafy below.—Moist, sandy sea-shores in the south-east; rare.—Fl. August, September. Annual.

11. *C. glaúcum* (Oak-leaved Goose-foot).—A much-branched, spreading, often prostrate, smooth and shining species, with oblong, sinuately-lobed *leaves* which are mealy beneath; and *flowers* in erect, simple, short, dense, leafless spikes.—Cultivated ground; rare. —Fl. August, September. Annual.

12. *C. Bonus-Henrícus* (Good King Henry, All Good, Mercury).—A dark green, succulent plant, 1—3 feet high, with large, succulent, triangular-hastate *leaves* and *flowers* in compound, leafless spikes.—Waste places near villages; common. The leaves are used as Spinach, and the plant is cultivated in Lincolnshire under the name of Mercury.—Fl. May—August. Perennial.

2. BÉTA (Beet).—Herbaceous plants with flat, almost entire *leaves* and spikes of perfect *flowers* in clusters of 2—3 together; *perianth* deeply 5-cleft, persistent, becoming fleshy; *stamens* 5; *stigmas* 2; *fruit* 1-seeded, adhering to the fleshy perianth-tube. (Name, the Latin name of the plant.)

1. *B. marítima* (Sea Beet).—The only British species, a tall, succulent plant, about 2 feet high, with angular, striped *stems*, prostrate below, and spreading in a circle, with ascending *branches;* large, stalked, ovoid, fleshy, glossy *leaves;* and numerous, long, slender, leafy spikes of green *flowers*, which are arranged 2 or 3 together, with a small, lanceolate, leafy bract at the base of each.—Sea-shores; frequent. —Fl. June—October. Perennial.



BÉTA MARÍTIMA (*Sea Beet*).

3. Átriplex (Orache).—Herbs or shrubs with flat, stalked, often hastate *leaves;* small, monœcious or diœcious *flowers* clustered in branched cymes; *perianth* 2—5-cleft; *stamens* 3—5; *stigmas* 2; *fruit* 1-seeded, covered by the enlarging but generally not adherent perianth. (Name, the old Latin name.)

* *Perianth not adherent to fruit.*

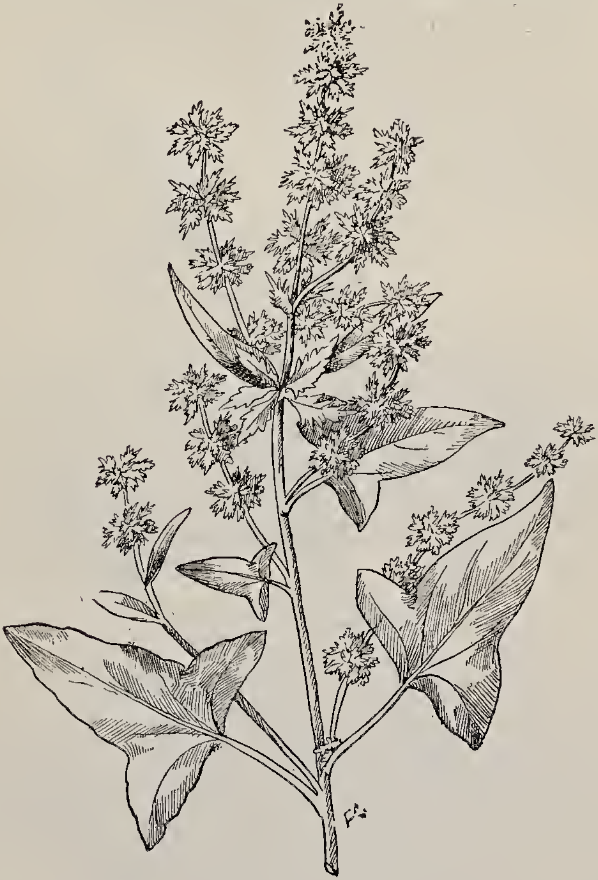
1. *A. littorális* (Grass-leaved Orache).—An erect, mealy plant, with the *stem* striped with reddish, resinous lines; ascending *branches; leaves* linear, usually quite entire, and never hastate; *flowers* in slender, terminal spikes of clusters; *perianth-segments* rhomboid or deltoid, toothed, with tubercles on the back.—Salt marshes; not common.—Fl. July—September.

2. *A. pátula* (Spreading Orache).—A common weed, mealy and often tinged with red; *stem* furrowed, spreading, often with the central branch erect and the rest prostrate, appearing as if they had been bent down by force; *leaves* triangular, cuneate, with 2 lobes spreading upwards from the lower angles, toothed, the *upper leaves* lanceolate, entire; *flowers* clustered on simple, interrupted spikes; *perianth* of the fruit of 2 rhomboid leaves, which are warty on the back.—Cultivated and waste ground, and on the sea-shore; abundant. Distinguished from the genus *Chenopódium* by the two perianth leaves enclosing the fruit.—Fl. July—October. Annual.

3. *A. hastáta* (Halberd-leaved Orache).—A nearly allied and equally common species, dark green, mealy, and differing mainly in its *lower leaves*, which are triangular-hastate, with lobes at the base, that is, which spread horizontally. The *seeds* are of two sizes, the larger brown and rough, the smaller black and smooth.—Growing in similar situations.—Fl. July—October. Annual.

4. *A. deltoídea* (Deltoid-leaved Orache).—Another

allied form, with all the *leaves* hastate; dense spikes of *flowers* in panicles; and almost all the *seeds* small,



Átriplex hastáta (*Halberd-leaved Orache*).

black, and polished.—Similar situations; frequent.—Fl. June—October. Annual.

5. *A. Babingtónii* (Rose-coloured Orache).—A variable species, usually pale and very mealy, but

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sometimes greener; *stem* striped with red, spreading, with ascending *branches; leaves* mostly opposite, ovate-triangular, somewhat 3-lobed at the base; *flowers* in simple, lax, leafy, terminal and axillary spikes; *perianth leaves* in the fruiting stage large, united so as to form a diagonal square a little rounded at its lateral angles.—Sea-shores; common.—Fl. July—September. Annual

SALICÓRNIA HERBÁCEA (*Jointed Glasswort*).

6. *A. laciniáta* (Frosted Sea Orache).—A very dis-

polysymmetric, axillary; *staminate flowers* in catkins, with a 2—4-lobed tubular *perianth,* and 3—8 *stamens* sessile in the tube; *carpellate flower* solitary, with a tubular, 2—6-cleft *perianth,* and superior, 1-chambered, 1-ovuled *ovary; style* short; *stigma* lateral; *fruit* an indehiscent nut, enclosed within the fleshy persistent perianth. The fruit of several species of *Elæágnus* is eaten in the East, and the flowers are highly fragrant, and abound in honey, which in some parts of Europe is considered a remedy for malignant fevers. The only British species is the Sea Buckthorn (*Hippóphaë rhamnoídes*).

1. Hippóphaë (Sea Buckthorn).—A genus containing only the one species *H. rhamnoídes,* the Sea Buckthorn, or Sallow Thorn, is a shrub, 4—8 feet high, with *branches* ending in spines; *leaves* scattered, obovate, silvery; *flowers* small, greenish, appearing with the leaves; *stamens* 4; *berries* orange-yellow, very juicy, acid.—Sandy shores on the east coast; rare.—Fl. May. Perennial.

Ord. LXVII. Urticáceæ.—Nettle Family.

A large and difficult Order the limits of which are variously assigned by different botanists. In its widest sense it comprises over 1,500 species, natives of all climates, of all sizes, and of very various properties. They have *leaves* either opposite or scattered, but usually stipulate, serrate, and rough; *flowers* usually imperfect, small and green; *perianth* 3—8-cleft and persistent, or wanting; *stamens* equal in number to the lobes of the perianth, and opposite to them; *ovary* superior, 1- rarely 2-chambered, 1- rarely 2-ovuled; *styles* 1—2; *fruit* dry, indehiscent, 1-seeded. One large section of the Order, not represented among British plants, has a milky juice often rich in rubber, and includes a number of edible fruits, or rather structures enclosing the fruits. The Cow-tree, Palo de vaca, Arbol de leche, of South America (*Brósimum Galactodéndron*), contains an abundance of wholesome milk, closely resembling that of the cow. *B. Aublétii*, a large tree, also South American, yields the spotted heart-wood known as Snake-wood, Letter-wood, or Leopard-wood. *Fícus elástica* and other species yield the Indian rubber of India. The Fig (*Fícus Cárica*), the Bread-fruit (*Artocarpus incisifólia*), the Jack-fruit (*A. integrifólia*), and the Mulberry (*Mórus nígra*) are the chief edible fruits of the Order. The Paper Mulberries of Japan (*Broussonétia papyrífera* and allied species), the common Nettles (*Urtíca*), and the closely-allied Rhea or Glass-cloth of India, *U.* (*Boehméria*) *nivea*, and *U. Púya*, and the Hemp (*Cánnabis sativa*) are the chief fibre-yielding plants in the Order. The Elms (*Ulmus*) are valuable timber-trees, and the wood of the Fustic (*Maclúra tinctória*) affords a valuable yellow dye. The bitter principle in the glands on the catkins of the Hop (*Húmulus Lúpulus*) give it its value as a preservative in beer. The British species of Nettle are well known for the burning properties of the formic acid contained in the stinging hairs with which they are plentifully armed; but they are not to be compared to the effects of incautiously handling some of the tropical species. In these a slight sensation of pricking is followed by a burning heat, such as would be caused by rubbing the part with a hot iron; and soon the pain extends and continues for days, with symptoms like those of lock-jaw, death even being said to have been caused by it. This burning property is dissipated by heat; and the young shoots of the common Nettle, like those of the Hop, are, when boiled, an excellent substitute for Asparagus.

1. Úlmus.—Trees with distichous *leaves;* perfect

flowers in clusters; bell-shaped, 4—5-cleft, persistent *perianth; styles* 2; *fruit* a rounded, 1-seeded *samara.*

2. Húmulus.—Twining plants with opposite lobed *leaves;* diœcious *flowers; staminate flower* with 5-leaved *perianth* and 5 *stamens; carpellate flowers* in a catkin of large *bracts; styles* 2.

3. Urtíca.—Herbs with opposite *leaves* and stinging hairs; *flowers* imperfect; *perianth* 4—5-cleft; *style* 1.

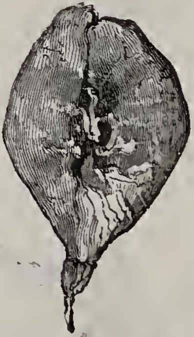
ÚLMUS CAMPÉSTRIS (*Common small-leaved Elm*).

4. Parietária.—Herbs with scattered, exstipulate *leaves;* polygamous, 4-merous *flowers; style* 1.

1. Úlmus (Elm).—Trees with distichous, oblique, rough *leaves,* with *stipules* falling early; *flowers*

perfect, in clusters, appearing before the leaves: *perianth* bell-shaped, 5- rarely 4-cleft, persistent; *stamens* 4—5; *styles* 2; *ovary* superior, 1—2-chambered, with an ovule in each chamber; *fruit* a thin, membranous, 1-seeded samara. (Name, the Classical Latin name of the genus.)

1. *U. montána* (Wych Elm).—A large tree, with furrowed *bark*; no *suckers*; downy *twigs*; irregularly doubly serrate, obliquely cordate acuminate *leaves*; *samara* orbicular, with the seed-cavity below the middle.—Woods, chiefly north of the Trent; common.—Fl. March, April. Perennial.



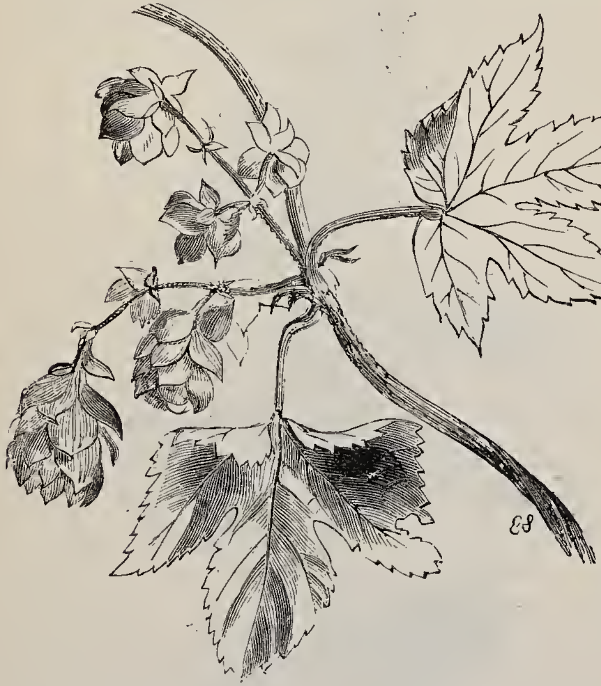
FRUIT OF ELM.

2. *U. campéstris* (Common Elm).—A large tree with furrowed bark; numerous *suckers*; *samara* obovate, with the seed-cavity above the middle.—Hedgerows chiefly south of the Trent; seldom ripening seed.—Fl. March—May. Perennial.

2. Húmulus (Hop).—Twining herbs with opposite lobed *leaves* with connate stipules; minute, diœcious *flowers*, the *staminate* in panicles, with *perianth* of 5 imbricate leaves and 5 *stamens*; the *carpellate* 2

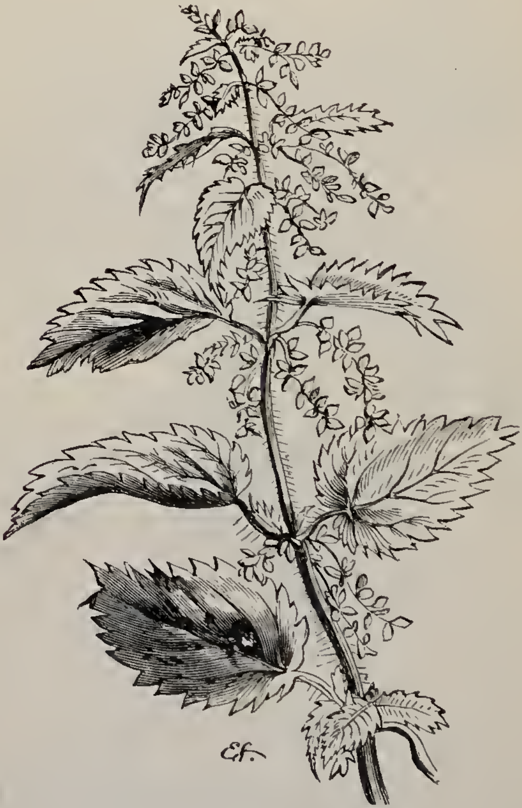
together in the axils of numerous *bracts* in a catkin; *styles* 2. (Name said to be from the Latin *humus*, rich soil, in which the plant flourishes.)

1. *H. Lúpulus* (Common Hop).—A beautiful twining plant with very rough, almost prickly, and very tough shoots (bine); and palmately 3—5-lobed *leaves*. The staminate plants known as "seeders" are common in a wild state; but not in hop-gardens. The ripe catkins are ovoid and yellow, their *bracts* covered with resinous glands.—Hedgerows; common.—Fl. July, August. Perennial.



HÚMULUS LÚPULUS (*Common Hop*).

3. **Urtíca** (Nettle).—Herbs or shrubs with tough inner bark and stinging hairs; *leaves* opposite, stipulate; *flowers* bracteate, 4-merous; *perianth* imbricate, persistent; *stamens* and *ovary* in separate flowers.



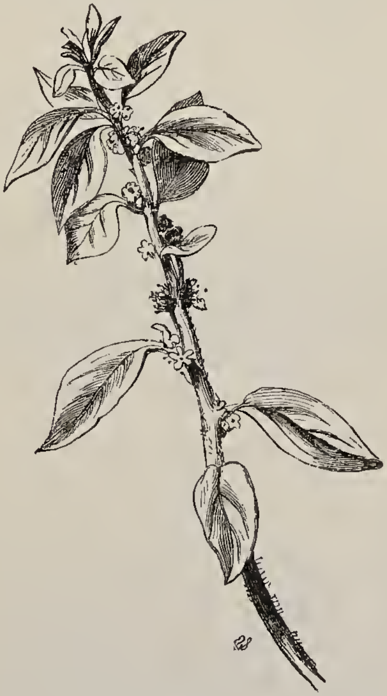
URTÍCA DIOÍCA (*Great Nettle*).

(Name from the Latin *uro*, I burn, from its stinging properties.)

1. *U. dioíca* (Great Nettle).—*Rhizome* creeping with runners; *stem* 2—4 feet high, seldom branched

pubescent; *leaves* generally cordate, deeply serrate; *flowers* in long, branched clusters.—A common weed, too well known to need further description.—Fl. June—September. Perennial.

2.* *U. pilulífera* (Roman Nettle).—With no hairs except the stings, 1—2 feet high; *leaves* ovate, coarsely toothed; *fruit* in globose, stalked clusters.—In the East of England, chiefly near the sea; local. The most virulent British nettle.—Fl. June—August. Annual.



PARIETÁRIA OFFICINÁLIS (*Common Pellitory-of-the-wall*).

3. *U. úrens* (Small Nettle).—Smaller than either of the other species, about a foot high, branched, with

no hairs except the stings; *flowers* in short, seldom branched clusters, staminate and carpellate together. —Waste places; abundant.—Fl. June—October. Annual.

4. PARIETÁRIA (Pellitory).—Pubescent herbs or shrubs with scattered, entire, exstipulate *leaves;* polygamous, 4-merous *flowers;* valvate, persistent *perianth* enlarging round the fruit. (Name from the Latin *paries*, a wall, where these plants often grow.)

1. *P. officinális* (Common Pellitory-of-the-wall).—The only British species, a much-branched, bushy, herbaceous plant, with reddish, brittle *stems;* ovate, hairy *leaves*, and axillary clusters of small, hairy *flowers*. The *filaments* are curiously jointed and elastic, so that if touched they suddenly spring from their incurved position and shed their pollen.—Old walls; common. In rural districts an infusion of this plant was once a favourite medicine.—Fl. June—October. Perennial.

§§ *Ovary inferior.*

ORD. LXVIII. ARISTOLOCHIÁCEÆ.—BIRTHWORT FAMILY.

A small group of herbs or shrubs, often climbing, chiefly tropical, being very abundant in South America, but rare elsewhere. They have scattered, simple, exstipulate *leaves*, and usually solitary, axillary, perfect *flowers*. The *perianth* is attached to the ovary below, tubular above, with a wide mouth; *stamens* 6—12, epigynous; *ovary* 3—6-chambered; *style* 1: *stigmas* radiate, equalling in number the chambers of the ovary; *fruit* 3—6-chambered, many-seeded. The plants of this Order are generally bitter, tonic, and stimulant, sometimes acrid or aromatic. The dried and powdered leaves of Asarabacca (*Ásarum euro-*

pæum) are used in the preparation of cephalic snuffs, exciting sneezing, and giving relief to headache and weak eyes. Virginian Snake-root (*Aristolóchia serpentária*) and other allied species are used as antidotes to the bite of venomous snakes. The juice extracted from the rhizome of a South American species is said to have the power of stupefying serpents if placed in their mouths; and African species are said to be used by Egyptian jugglers to stupefy the snakes with which they play tricks.

1. Ásarum.—*Perianth* polysymmetric, bell-shaped, 3-cleft; *stamens* 12.

*2. Aristolóchia.—*Perianth* monosymmetric, tubular, with a dilated lip; *stamens* 6.

1. Ásarum (Asarabacca).—Herbs with a stout *rhizome*; radical *leaves*; a solitary, purplish-green *flower*, with persistent, 3-lobed *perianth*; *stamens* 12; *ovary* 6-chambered; *fruit* capsular. (Name of Greek origin, said to denote that it was excluded from garlands.)

1. *A. europæum* (Asarabacca).—The only species found in Britain, and perhaps not indigenous, a curious plant consisting of a very short, fleshy *stem*, bearing two large, dark-green, kidney-shaped, evergreen *leaves* and a solitary, purplish-green drooping *flower*.—Woods; very rare.—Fl. May. Perennial.

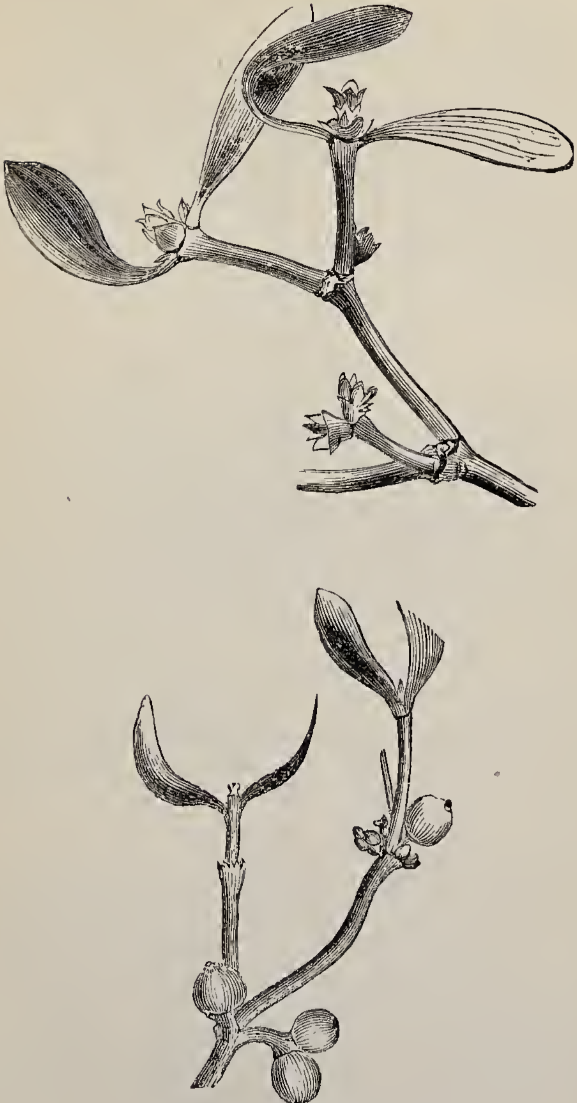
*2. Aristolóchia (Birthwort).—Shrubby, often twining plants, with stalked cauline *leaves*, and axillary, coloured *flowers*, with a tubular *perianth* swollen at the base, lined with hairs and dilated on one side into a lip; *stamens* 6, inserted on the style; *ovary* 6-chambered; *fruit* capsular. (Name in Greek denoting the supposed medicinal virtues of the genus.)

1.* *A, Clematítis* (Birthwort).—The only species found apparently wild in Britain, not indigenous, a singular glabrous plant, with creeping woody *rhizome ;* slender, erect, angular, unbranched *stems ;* large, cordate, obtuse *leaves*, glaucous beneath; and yellow *flowers*, 4—8 together, expanding into an oblong lip. —Among ruins in the South of England ; rare.—Fl. June—September. Perennial.

ORD. LXIX. LORANTHÁCEAE.—MISTLETOE FAMILY.

An interesting Order of parasitic shrubs, comprising about 500 species, inhabiting tropical and temperate regions. Their *leaves* are usually opposite, fleshy, and evergreen ; and the *flowers* inconspicuous and diœcious. The *perianth* consists of 4—8 segments, sometimes united in a bell-shaped form and valvate in bud ; the *stamens* equalling the perianth-leaves in number, and opposite and adnate to them ; the *ovary* inferior, 1-chambered and 1-ovuled ; and the *fruit* a viscid berry which adheres to the bark of the host tree. Soon a thread-like radicle is sent forth, which, from whatever part of the berry it proceeds, curves towards the supporting tree, pierces its bark, and finally roots itself in the growing wood. The Common Mistletoe is capable of growing on a great number of very different trees, having the power of selecting and appropriating to its own use such juices as are fitted for its sustenance. It may readily be propagated by attaching the fresh berries to the bark on the under side of a branch of the Apple. Great virtues were attributed to this plant by the Druids ; but it has now no medicinal repute, though there is an enormous demand for it in connection with Christmas festivities.

1. VÍSCUM (Mistletoe).—*Flowers* diœcious, small, green, clustered in the forks of the branches; *perianth-leaves* 4, united ; *stamens* many-chambered, opening



VÍSCUM ÁLBUM (*Common Mistletoe*).

by pores; *stigma* sessile. (Name, the Latin name of the plant, signifying *birdlime* or alluding to the sticky berry.)

1. *V. álbum* (Common Mistletoe).—The only British species, a yellow-green, glabrous, plant with bifurcating cylindric *stems;* thick, leathery, obtuse *leaves,* narrower on the staminate plants; *berries* waxen-white.—On the Apple and other trees, but very rarely on the Oak; chiefly in the south. Most conspicuous in winter, when its berries ripen.—Fl. March—May. Perennial.

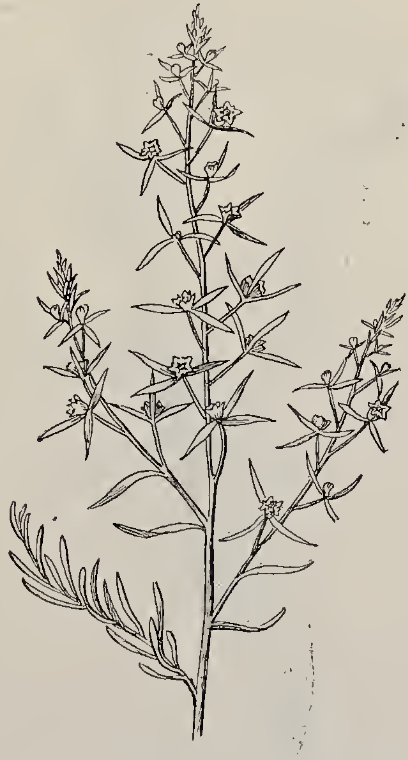
ORD. LXX. SANTALÁCEÆ.—SANDAL-WOOD FAMILY.

A small Order of herbs, shrubs, and trees, mostly root-parasites, which are widely distributed over the globe. They have mostly scattered, simple, exstipulate *leaves;* small *flowers; perianth* attached to the ovary, 3—5-cleft, valvate when in bud; *stamens* as many as the lobes of the perianth, and opposite and attached to them, with short filaments; *ovary* 1-chambered; *style* 1; *ovules* 2—5; *fruit* hard, dry, indehiscent, 1-seeded. The only important product of the Order is the fragrant wood of the East India Sandal-wood (*Sántalum álbum*) and of the allied Australasian species, which is used for cabinet-work, incense, perfumery, and medicine. There is only one British species.

1. THÉSIUM (Bastard Toad-flax).—Slender herbs with narrow *leaves;* perfect *flowers; perianth* 4—5-cleft, persistent; *stamens* 4—5, each with a tuft of hairs at its base; *style* short; *stigma* undivided; *ovules* 3. (Name of doubtful origin.)

1. *T. humifúsum* (Bastard Toad-flax).—The only British species; a small plant with fibrous *roots* attached to those of various other plants; a yellow, woody *rhizome;* prostrate *branches* spreading in a

circle; linear-lanceolate, 1-veined *leaves*, resembling those of a Toad-flax; and clusters of whitish *flowers; bracts* 3.—Dry chalky and limestone hills in the South of England; rare.—Fl. May—July. Perennial.



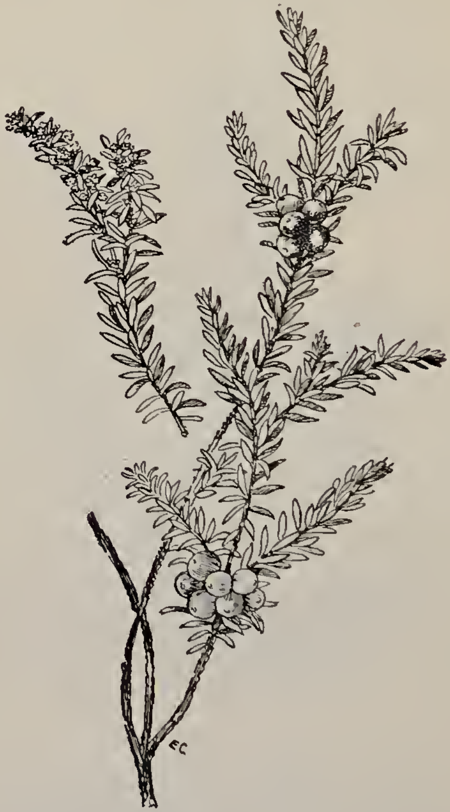
THÉSIUM HUMIFÚSUM (*Bastard Toad-flax*).

SERIES II. ACHLAMÝDEÆ.

§ *Flowers not in catkins.*

ORD. LXXI. EMPETRÁCEÆ.—CROWBERRY FAMILY.

A very small Order of small heath-like evergreen shrubs, of obscure affinities, inhabiting North Temperate, Arctic, and Sub-Antarctic regions. They have scattered, exstipulate *leaves ;* minute, axillary, polysymmetric, polygamous *flowers*, with 4—6 imbricate scales, either bracts or perianth-leaves ; *stamens*



EMPÉTRUM NÍGRUM (*Black Crowberry*).

3—4, alternate with the inner scales ; *ovary* 2—9-chambered, on a fleshy disk ; *style* 1 ; *stigma* radiate ; *fruit* fleshy, with bony, 1-seeded chambers. The slightly acid berries of the Crowberry (*Empétrum nígrum*), though unpleasantly turpentinous, are eaten in Arctic regions, being considered as a preventive of scurvy. There is only one British species.

EMPÉTRUM (Crowberry).—*Flower-scales* 3 outer and 3 inner; *stamens* 3; *style* short; *stigma* peltate, 6—9-rayed; *berry* globose, 6—9-chambered. (Name from the Greek *en pétron*, on rock, from the character of its habitat.)

1. *E. nígrum* (Black Crowberry, Crakeberry).—A small, prostrate, leafy shrub, with the habit of a Heath; *stems* much branched; *leaves* linear-oblong, so revolute that their margins meet at the back; *flowers* in the axils of the upper leaves, purplish; *berries* black.—Mountainous heaths in the north and west; frequent. The berries are much eaten by moor-fowl.—Fl. April—June. Perennial.

ORD. LXXII. EUPHORBIÁCEÆ.—SPURGE FAMILY.

A large Order containing about 200 genera and 3,000 species distributed over most of the tropical and temperate regions of the globe, and comprising trees, shrubs, and herbs. Their affinities are obscure; for, though the European species have no perianth, many tropical genera appear to possess one. They appear to be related on the one hand to *Urticáceæ*, and, on the other, to *Malváceæ*. Many African species are spinous, presenting a superficial resemblance to *Cactáceæ*. Most plants in the Order have milky juice, which is often acrid and contains rubber and various alkaloids. The *leaves* are usually scattered and simple, and often have deciduous *stipules*. The *flowers* are small, the *stamens* and *carpels* in separate flowers and accompanied by *bracts* or an *involucre*. In the large genus *Euphórbia* there is a cup-shaped involucre, with yellow crescent-shaped glands round its margin, enclosing several staminate flowers, each consisting of one continued Sub:

stamen on a pedicel, surrounding one longer-stalked carpellate flower of 3 united *carpels*, with as many *styles*, *stigmas*, chambers to the *fruit*, and *seeds*. The *fruit* often separates elastically into its constituent carpels. Among so numerous an assemblage of plants, we should expect to find a considerable variety of properties, which, indeed, exists, though nearly all the Order agree in the acrid, narcotic, or corrosive character of the juice. A small quantity of the milky juice of one of our herbaceous British species of Spurge (*Euphórbia*) placed upon the tongue produces a burning heat in the mouth and throat, which continues for many hours, but may be allayed by frequent draughts of milk. The roots of several of the common kinds enter into the composition of some of the quack fever medicines; but they are too violent in their action to be used with safety. The Irish Spurge (*E. hibérna*) is extensively used by the peasants of Kerry for poisoning, or rather stupefying, fish. So powerful are its effects, that a small creel, or basket, filled with the bruised plant, suffices to poison the fish for several miles down a river. The Caper-Spurge (*E. Láthyris*), a common weed in gardens, is a dangerous substitute for genuine capers, its unripe fruits superficially resembling the unopened flower-buds of *Cápparis spinósa*, an entirely distinct shrubby plant, indigenous to the South of Europe. Gum Euphorbium is a gum-resin obtained from *Euphórbia resinífera*, a native of the lower slopes of the Atlas Mountains, by wounding the stems, and collecting the sap which exudes. Pliny relates that the plant was discovered by Juba, King of Mauritania, and named by him after his physician, Euphorbus. It is an acrid poison, so violent in its effects as to produce severe inflammation of the nostrils if those who are employed in powdering it do not guard themselves from its dust. It was formerly employed for raising blisters, but is now only used in veterinary medicine, or for mixing with for 620 n. 35 · infra:

tinct plant, covered with silvery scales, giving the whole plant a whitish hue; *stem* buff-coloured, nearly without stripes, angular, spreading; *leaves* triangular, sinuate, sometimes toothed, mealy beneath; *perianth-leaves* of fruit rhomboid, 3-lobbed, united in a swollen, hardened base.—Sandy sea-shores; frequent.—Fl. July—October. Annual.

** *Perianth adherent to fruit.*

7. *A. portulacoïdes* (Shrubby Sea Purslane, Crab-weed.—A shrubby plant, mealy, with greyish scales, straggling; *leaves* mostly opposite, obovate-lanceolate, entire; *flowers* in terminal interrupted panicles; *perianth* sessile.—Sea-shore; frequent.—Fl. August—October. Perennial.

8. *A. pedunculáta* (Pedunculate Sea Purslane).—A herbaceous, slender, little-branched, mealy species, differing mainly in having an elongating *pedicel* to the fruit.—Muddy salt marshes on the east coast; very rare.—Fl. August—October. Annual.

4. Salicórnia (Glasswort, Marsh Samphire).—Singular jointed, fleshy, green, leafless, herbaceous plants with opposite *branches*, and minute, perfect *flowers* sunk in pits at the nodes; *perianth* fleshy, persistent; *stamens* 1—2; *styles* 2. (Name from the Latin *sal*, salt, *cornu*, a horn, from the abundance of soda in the plant, and its horn-like branches.)

1. *S. herbácea* (Jointed Glasswort, Marsh Samphire).—An erect, herbaceous plant, 4—8 in. high, with the joints of the *stem* thickening upwards and the branches all ending in tapering spikes of *flowers*.—Salt marshes; abundant. Formerly used in the manufacture of glass, and still used as a pickle, under the name of Samphire, in Lincolnshire and on other parts of the coast, being generally preferred to the

Umbelliferous *Críthmum*.—Fl. August, September. Annual.

2. *S. appréssa* (Prostrate Glasswort).—A well-marked, prostrate form with its *branches* closely adpressed to the soil and spreading in a triangular fan-like form, with cylindric *internodes* and acute *spikes*.—On the coast of Kent; very rare.

3. *S. radícans* (Rooting Glasswort).—*Stem* woody, prostrate; *branches* ascending; *internodes* not thickening upwards; *spikes* blunt.—Salt marshes on the east and south coasts; rare. Much more branched and tufted, and browner in colour than *S. herbácea*.—Fl. August, September. Perennial.

5. Suæ̂da (Sea Blite).—Maritime shrubs and herbs with scattered, fleshy *leaves*, semicircular in transverse section; and small, green, axillary *flowers; perianth* deeply 5-cleft, often fleshy; *stamens* 5; *stigmas* 2—5: *perianth-segments* in fruit neither keeled nor winged. (Name said to be from *suæd*, soda, in which the plants abound.)

1. *S. fruticósa* (Shrubby Sea Blite).—A smooth, rather glaucous plant; *stem* woody, erect, 1—3 feet high, with ascending *branches; leaves* semicylindric, blunt; *styles* 3.—Sandy and shingly beaches, mostly on the east coast; rare.—Fl. July—October. Perennial.

2. *S. marítima* (Annual Sea Blite).—A low, straggling plant, smooth, glaucous, and reddish in winter, with slender *branches* rising 1—2 feet; acute, semicylindric, short, fleshy *leaves; flowers* 1—5 together; *styles* 2.—Muddy sea-shores: common.—Fl. July—October. Annual.

6. Sálsola (Saltwort).—Shrubs and herbs with sessile, fleshy, stiff or spinous, awl-shaped *leaves;*

small, axillary, perfect *flowers; perianth* deeply 5-cleft; *stamens* 3—5; *stigmas* 2—3; *fruit* 1-seeded, enclosed by the much enlarged, 5-winged perianth. (Name from the Latin *sal*, salt, the plants being rich in soda.)

1. *S. Káli* (Prickly Saltwort).—The only British species, a stiff, glaucous, hairy, much branched plant, with striped, angular *stem* seldom more than a foot high; succulent, awl-shaped *leaves*, each terminating in a sharp spine; and solitary axillary *flowers*.—Sandy sea-shores; common.—Fl. July, August. Annual.

ORD. LXIV. POLYGONÁCEÆ.—THE PERSICARIA FAMILY.

A considerable Order of herbaceous plants, chiefly natives of temperate climates, bearing scattered, simple *leaves* with sheathing membranous *stipules*, *petioles* dilated at the base and margins revolute in the bud. The *flowers* are generally perfect, small, numerous and growing in spikes or panicles, so that many members of the Order are handsome plants. The *perianth* is deeply 3—6-parted, often in 2 rows and coloured, imbricate in bud, persistent; *stamens* 5—8, opposite the leaves of the perianth; *ovary* superior, ovoid, 3-sided, or compressed, 1-chambered, 1-ovuled; *styles* 1—3; *fruit* a hard, flattened, or triangular, indehiscent nut, usually enclosed in, but not adherent to, the perianth. The properties residing in the leaves and roots are sometimes very different, the former being in many cases acid, and sometimes of an agreeable flavour, the latter nauseous and purgative. The powdered root of several species of *Rhéum* affords the valuable medicine Rhubarb, and the leaf-stalks of the same plants are much used for making tarts, their sharp taste being attributable to the presence of oxalic and malic acids. The Common

Sorrel (*Rúmex Acetósa*) is sometimes used in the same way as Rhubarb-stalks, or as a salad; but the species mostly employed in cookery is *R. scutátus*, a native of Southern Europe. Other species of this genus are the Docks, known as troublesome weeds in most regions of the globe. The Buckwheat, or Beechwheat (*Fagopýrum esculéntum*), so called from the resemblance in shape between its fruits and those of the Beech, is probably a native of Central Asia. In America and some European countries the flour derived from its seeds is made into cakes or bread; but in England it is chiefly cultivated as a food for pheasants, which are very partial to it.

1. Polýgonum.—*Perianth* deeply 5-cleft; *stamens* 5—8; *styles* 2—3; *fruit* a triangular or flattened nut, not winged; *embryo* at 1 side of the seed; *cotyledons* flat.

*2. Fagopýrum. — *Perianth* 5-cleft; *stamens* 8; *styles* 3; *fruit* triangular, not winged; *embryo* in the centre or axis of the seed; *cotyledons* large, leaf-like, and plaited.

3. Oxýria.—*Perianth* deeply 4-cleft, the 2 inner segments larger; *stamens* 6; *styles* 2; *fruit* a flattened nut with a membranous wing; *embryo* central.

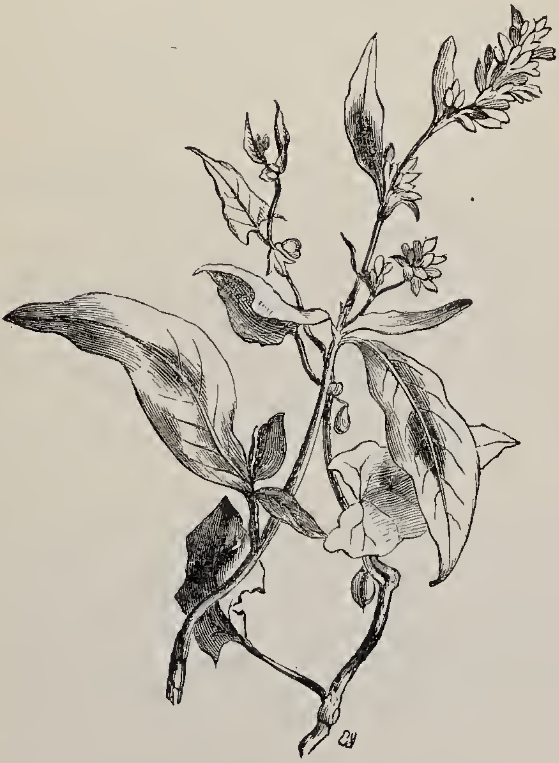
4. Rúmex.—*Perianth* deeply 6-cleft, the 3 inner segments much larger; *stamens* 6; *styles* 3; *fruit* a triangular nut, covered by the enlarged inner perianth-segments; *embryo* lateral.

1. Polýgonum (Persicaria).—Herbaceous plants with *stems* often enlarged and bent at their nodes; *leaves* scattered, with ochreate stipules; *flowers* perfect, in spikes, racemes, or panicles; *perianth* deeply 5-cleft, the 3 outer segments sometimes enlarging in the fruiting stage; *stamens* 5—8, with versatile anthers; *ovary* compressed or 3-sided; *styles* 2—3; *fruit* not winged; *embryo* lateral; *cotyledons* thin, flat. (Name

from the Greek *polús*, many, *gonu*, knee, from the many knee-like nodes.)

* *Twining plants; leaves sagittate; flowers in racemes; stamens* 8; *styles* 3, *united; nut 3-sided.*

1. *P. Convólvulus* (Black Bindweed, Climbing Buckwheat, or Persicaria).—A mischievous weed with the habit of the Field Convolvulus (*Convólvulus* (*arvénsis*), twining round the stems of other plants



POLÝGONUM CONVÓLVULUS (*Climbing Persicaria*).

and strangling them; *leaves* cordate-sagittate; *flowers* greenish-white, in erect, slender, axillary and terminal racemes, bearing 4—10-flowered clusters; *outer perianth-segments* bluntly keeled, green with white margins; fruit rather rough.—Cultivated ground; abundant.—Fl. July—September. Annual.

2. *P. dumetórum* (Copse Buckwheat).—A similar but more luxuriant species, climbing to a height of 4 or 5 feet; *flower-stalks* more slender; *outer perianth-segments* winged; *nut* smooth and shining—Bushy places in the South of England; rare.—Fl. July—September. Annual.

** *Mostly prostrate plants; leaves narrow; stipules silvery, torn; flowers axillary,* 1—3 *together; stamens usually* 8; *styles* 3; *nut* 3-*sided.*

3. *P. aviculáré* (Common Knot-grass).—A common weed with branched *stem*, usually prostrate, but varying greatly in size, and in rich soil often growing nearly erect; *leaves* lanceolate, with chaffy stipules; *flowers* minute, axillary, pink or greenish-white.—Waste ground and roadsides; abundant.—Fl. May—October. Annual.

4. *P. Ráii* (Ray's Knot-grass).—Intermediate between the preceding and following species, resembling the former in habit, the latter in fruit. It has long, straggling, prostrate *stems*; lanceolate-elliptical, flat *leaves* which bend towards the stem and are often glaucous; and a large, smooth, shining *nut* which is longer than the perianth.—Sandy sea-shores; not uncommon.—Fl. August, September. Annual or perennial.

5. *P. marítimum* (Seaside Knot-grass).—An allied, but more shrubby species, with prostrate, often much buried, stiff, and woody *stem*; fleshy *leaves* with revolute edges, diverging from the stem, netted with veins and often glaucous beneath.—Sandy sea-shores

in the South-west of England ; very rare.—Fl. July—September. Perennial.

*** *Leaves with or without a dark spot in the centre ; flowers in spikes; stamens* 4—8; *styles* 2—3; *nut compressed or 3-sided.*

6. *P. Hydrópiper* (Water Pepper, Biting Persicaria).—A very acrid plant, creeping and rooting at the base, 1—3 feet high, much branched, with lanceolate, tapering wavy *leaves*, and well distinguished by its slender, drooping, loose spikes of greenish *flowers ; stamens* 6.—Ditches and places where water has stood during winter ; abundant. The fresh juice, though acrid, is of a not unpleasant flavour, and is said to cure pimples on the tongue.—Fl. August, September. Annual.

7. *P. mínus* (Creeping Persicaria).—A much smaller and more slender species than the last, much branched, erect, or prostrate with ascending branches ; *leaves* linear-lanceolate, flat, with fringed stipules close to the stem ; very slender, erect spikes of *flowers* which are only half the size of those of *P. Hydropiper; styles* 2—3, united for at least half their length.—Wet gravelly places ; not uncommon.—Fl. August, September. Annual.

8. *P. mité* (Lax-flowered Persicaria).—*Stem* creeping and rooting below, 1—3 feet high, branched, slender; *leaves* lanceolate, wavy, with loose, funnel-shaped, much fringed stipules ; *flowers* in erect, slender, interrupted spikes ; *stamens* 5—6 ; *styles* 2—3, united for half their length ; *nut* black, roughish, compressed.—Wet places ; local.—Fl. June—September. Annual.

9. *P. Persicária* (Common Persicaria).—A common weed, 1—2 feet high, erect or ascending, usually

swollen at the nodes, branched; *leaves* lanceolate, flat, with minute warts, often with a purplish-black blotch in the centre, more or less hairy on both sides; *stipules* loose, much fringed; *flowers* in a short, dense, erect, cylindrical spike, red or white; *peduncle* smooth; *stamens* 5—8; *styles* 2—3, united for half their length.—Waste and damp ground; abundant.—Fl. July—October. Annual.

10. *P. lapathifólium* (Pale-flowered Persicaria).—A closely allied species; *stem* sometimes red or spotted, swollen at the nodes; *leaves* lanceolate, acuminate, smooth or downy, sometimes with a black blotch above, or glaucous below; *stipules* close to the stem, with little or no fringe; *flowers* pale, in axillary or terminal, cylindric spikes; *peduncle* rough; *stamens* 5—6; *styles* 2, distinct.—Waste and damp places; common.—Fl. July—September. Annual.

11. *P. maculátum* (Spotted Persicaria).—Smaller than the preceding, often prostrate, with very thick nodes; *leaves* lanceolate, tapering much at both ends, wavy, generally blotched, white and woolly beneath, with loose, shortly fringed *stipules*; *spikes* sometimes interrupted; *peduncle* rough; styles connected below.—Damp gravelly places; not common.—Fl. July—September. Annual.

12. *P. amphíbium* (Amphibious Persicaria).—Assuming such different forms when growing in the water and on land that they might well be taken for two distinct species. It has a slender, woody, branched *rhizome* creeping in the mud, with *branches* about a foot high and erect, if on land, with sub-sessile, lanceolate, hairy *leaves*, or with *floating stems* 2—3 feet long, if on water, supported by long-stalked, floating, oblong, smooth *leaves*; *flowers* rose-coloured, in handsome oblong spikes; *stamens* 5, with exserted anthers; *styles* 2, united for half their length; *fruit* flattened.—Ditches and banks of pools; common.—Fl. July—September. Perennial.

**** *Plants with rhizomes; erect, unbranched stems; terminal, spike-like racemes; stamens* 8; *styles* 3; *nut* 3-*sided.*

13. *P. Bistórta* (Bistort, Snakeweed, Snake-root).—A rather handsome plant, with a large, woody, twisted *rhizome*, and several erect, simple *stems* 1—1½ foot high; *leaves* ovate, the radical ones on winged petioles and glaucous beneath; *flowers* pink, in terminal, cylindrical, dense spikes.—Moist meadows; frequent. The English names *Bistort* (twice twisted) and *Snake-root* allude to the form of the rhizome. It forms large circular patches in meadows, and also occurs in old-fashioned gardens, where its astringent rhizome was once grown as a medicine. The green shoots are eaten in Cumberland under the name of *Easter Man Giants*, which perhaps means Easter eating, from the French *mangeant.*—Fl. June—September. Perennial.

14. *P. viviparum* (Viviparous Bistort, Alpine Bistort).—A slender plant, 6—8 in. high, with a slender *rhizome*; a simple, erect *stem*; *leaves* linear-lanceolate, with their margins rolled back; *flowers* pink, in a slender, loose, blunt spike, which has small red bulbils in its lower part in place of flowers.—Mountain pastures, especially in the Scottish Highlands.—Fl. June, July. Perennial.

*2. FAGOPÝRUM (Buckwheat), a genus differing from *Polýgonum* mainly in the *embryo*, which is in the centre or axis of the seed, and has large, leaf-like, plaited *cotyledons*, is only represented in England by one species, the Common Buckwheat (*F. esculéntum*), probably a native of Central Asia, and not indigenous in Britain. It has erect, branched *stems*, about a foot high; cordate-sagittate, acute *leaves*; and pinkish *flowers* in spreading panicles.—Sown as food for pheasants.—Fl. July, August. Annual.

3. Oxýria (Mountain Sorrel), a genus containing only the one species *O. dígyna*, a plant resembling the Common Sorrel (*Rúmex Acetósa*) in habit, but shorter and stouter. It grows 8—10 in. high, and is smooth and rather fleshy. The *leaves* are all radical and kidney-shaped, with long stalks; and the *flowers* are green, and grow in clustered spikes. The *perianth* is deeply 4-cleft, the segments in 2 rows, the inner larger and persistent; *stamens* 6, with versatile anthers; *styles* 2; *fruit* a flattened nut with a broad, membranous wing.—Damp places near the summits of high mountains in the north; not uncommon. (Name from the Greek *oxús*, sharp, from the pleasantly acid flavour of the stem and leaves.)—Fl. June—August. Perennial.

4. Rúmex (Dock, Sorrel).—Herbaceous plants with a *rhizome;* usually grooved *stems;* scattered *leaves* with tubular stipules; *flowers* in racemes or panicles of whorls; *perianth* deeply 6-cleft, the 3 inner segments enlarging in the fruit stage; *stamens* 6, with basifixed anthers; *styles* 3; *stigmas* feathery, wind-pollinated; *fruit* a triangular nut, covered by the enlarged inner perianth-segments; *embryo* lateral. (Name, the old Latin name of the plant.)

* *Insipid plants* (Docks), *with leaves not hastate, and perfect flowers.*

The species in this group hybridise freely, thus adding to the difficulty of discriminating between them.

1. *R. conglomerátus* (Sharp Dock).—A smooth, slender plant, 1—3 feet high, with few spreading *branches; leaves* oblong-lanceolate, not narrowing above the base, cordate or rounded at the base, acute; *flowers* in a panicle of distant whorls, leafy almost to the top;

inner perianth-segments linear-oblong, sub-acute, each bearing a large oblong wart.—Wet places; common.—Fl. June—August. Perennial.

2. *R. rupéstris* (Shore Dock).—A nearly allied form, with a more compact, upright habit; *leaves* strap-shaped, rounded and narrowed at both ends; *panicle* tapering, whorls not very distant; *inner perianth-segments* large, narrow, oblong, blunt, with large warts.—On the south coast; rare.—Fl. June—August. Perennial.

3. *R. sanguíneus* (Bloody-veined Dock).—A smooth species with a slender *stem*, 1—4 feet high, with few ascending *branches; leaves* ovate-lanceolate, fiddle-shaped, slightly wavy, usually cordate and with the veins tinged of a beautiful crimson; *flowers* in many-flowered, distant whorls forming a loose panicle, only leafy at the base; *inner perianth-segments* oblong, blunt, with a large, smooth wart on the outermost.—Roadsides and hedges; common. The form with green veins is the more frequent.—Fl. June—August. Perennial.

4. *R. marítimus* (Golden Dock).—A slightly downy, yellow-green plant, 1—2 feet high, with ascending *branches; leaves* short-stalked, linear-lanceolate, narrowed at both ends, slightly wavy; *flowers* in crowded, confluent, many-flowered whorls, in a leafy panicle with spreading branches; *inner perianth-segments* triangular, acuminate, orange-yellow, with 2 bristly teeth, often longer than the segment, on each side, and each with a prominent, narrow, oblong wart.—Marshes, principally near the sea; rare.—Fl. July, August. Biennial.

5. *R. limósus* (Yellow Marsh Dock).—A closely allied species, with the whorls distinct, looser, and fewer-flowered; the *inner perianth-segments* ovate-oblong, with shorter, bristly teeth; and the *nut* much larger.—Marshes; less common than *R. marítimus*.—Fl. July—September. Perennial.

6. *R. púlcher* (Fiddle Dock).—A small, nearly smooth, straggling, branched plant; *lower leaves* fiddle-shaped or oblong, with a heart-shaped base and narrowed above, with slender petioles; *upper leaves* lanceolate, acute; *flowers* in distant whorls forming a spreading, leafy panicle; *inner perianth-segments* pale-coloured, oblong, deeply toothed along the lower halves of their edges, with a network of veins, and on one of them a more prominent, oblong, prickly wart.—Waste places on dry soil; not uncommon.—Fl. June—October. Biennial or perennial.

7. *R. obtusifólius* (Broad-leaved Dock).—A tall, stout species, 2—3 feet high, with ascending branches; *lower leaves* ovate-oblong, cordate, blunt, finely crenate, wavy, with slender stalks; *upper* oblong-lanceolate; *flowers* in distant whorls, leafless above; *inner perianth-segments* long, triangular, blunt, with netted veins and usually strong teeth at the base, and an ovoid red or brown wart.—Waste places; common.—Fl. July—September. Perennial.

8. *R. críspus* (Curled Dock).—The commonest of the Docks, 1—3 feet high, branched; *leaves* stalked, lanceolate, acute, wavy, and crisped; *flowers* in crowded whorls forming a panicle, with erect branches, leafy below, often tinged with a bright red; *inner perianth-segments* equal, cordate, blunt, netted, green or red, with a small, smooth wart.—Waste places; far too common.—Fl. June—October. Perennial.

9. *R. doméstícus* (Long-leaved Water Dock).—A very robust, smooth species, 1—4 feet high; *leaves* very large, lanceolate, waved, and crisped, on semi-cylindric petioles with slightly raised edges; *flowers* in crowded whorls, forming a large, dense, lobed panicle, leafy at the base only; *inner perianth-segments* broadly cordate, membranous, netted, without warts.—Meadows in the north; frequent; preferring spots liable to be flooded.—Fl. July, August. Perennial.

10. *R. Hydrolápathum* (Great Water Dock).—A

picturesque plant, 3—6 feet high, erect, branched, smooth; *leaves* often more than a foot long, lanceolate, acute, often cordate at the base, finely crenate on long petioles which are not winged; *flowers* green, in crowded whorls, forming very large, almost leafless panicles; *inner perianth-segments* triangular, netted, with oblong tubercles.—River-banks frequent.—Fl. July, August. Perennial.

RÚMEX ACETÓSA (*Common Sorrel*).

* *Acid herbs* (Sorrels) *with leaves generally hastate and imperfect flowers.*

11.* *R. alpínus* (Monk's Rhubarb).—A slightly downy plant, with thick *rhizome;* stem stout, 2—4 feet high; *leaves* roundish-cordate, not hastate, on long channelled stalks; *flowers* monœcious, in crowded, but not confluent whorls, forming a panicle with numerous erect branches, leafy at the base only; *inner perianth-segments* ovate, cordate, membranous, without warts.—Near cottages, formerly cultivated for its astringent rhizome and as a pot-herb.—Fl. July, August. Perennial.

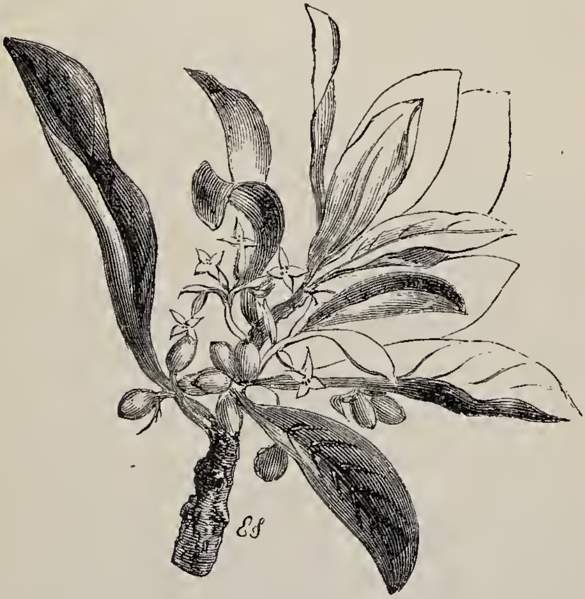
12. *R. Acetósa* (Common Sorrel).—A slender, smooth plant, about 2 feet high, with simple, juicy *stems; radical leaves* on very long stalks, sagittate, glaucous beneath; *upper leaves* sessile; *stipules* brown; *flowers* reddish-green, diœcious, in leafless panicles with erect branches; *outer perianth-segments* reflexed in fruit; *inner* round, membranous, with a minute wart at the base.—Meadows; abundant. Well known for its pleasing acid taste.—Fl. May—August. Perennial.

13.* *R. scutátus* (French Sorrel).—The species chiefly cultivated as a pot-herb or salad, with hastate-ovate, slightly fiddle-shaped leaves, is occasionally naturalised.

14. *R. Acetosélla* (Sheep's Sorrel).—Much smaller than *R. Acetósa;* 6—10 in. high; often tinged, especially in autumn, with a deep red; *leaves* lanceolate-hastate; *stipules* silvery, torn; *flowers* diœcious, in leafless panicles with erect branches; *outer perianth-segments* ascending, *inner* without warts.—Dry gravelly places; abundant.—Fl. May—August. Perennial.

ORD. LXV. THYMELÆÁCEÆ.—DAPHNE FAMILY.

A small Order of plants, mostly shrubby, remarkable for their tough inner bark, which is of a highly acrid nature, causing excessive pain if chewed, and raising a blister if applied to the skin. They have undivided, exstipulate, laurel-like *leaves*; *flowers* generally perfect; *perianth* tubular, 4- rarely 5-cleft, coloured, imbricate; *stamens* 2—10, inserted in 2 rows in the perianth-tube; *ovary* superior, 1-chambered; *stigma* undivided; *fruit* a 1-seeded nut or drupe. The bark of several species is used for making rope and paper, that of *Lagétta linteária*, the Lace-bark tree of Jamaica, for instance, which can also be pulled out under water into strong lace patterns. *Dáphné japónica*, *D. índica*, and other species are commonly cultivated in conservatories and gardens for the sake of the delicious fragrance of their blossoms. The



DÁPHNÉ LAURÉOLA (*Spurge Laurel*).

for 637 vide supra

berries of the Spurge Laurel (*Dáphné Lauréola*), the commoner of the two species which represent the Order in Britain, are poisonous to all animals except birds; and both the bark and root of the other British species, the Mezéreon (*Dáphné Mezéreum*), though used in medicine, are very violent in their effects.

1. DÁPHNÉ (Spurge Laurel).—Shrubs with *leaves* usually scattered and evergreen; *flowers* fragrant; *perianth* tubular, with 4 spreading lobes; *stamens* 8, sub-sessile, included. (Name, the Greek for a *Laurel*, which it resembles in its foliage.)

1. *D. Mezéreum* (Mezereon).—A shrub with few erect *branches*; very fragrant, pink *flowers*, sessile, 3 together, appearing before the leaves; *leaves* stalked, obovate, acute, not evergreen; *fruit* red, ovoid.—Woods; very rare.—Fl. February—April. Perennial.

2. *D. Lauréola* (Spurge Laurel).—A low shrub, about 2 feet high, very little branched, and remarkable for its smooth, erect *stems*, which are bare of leaves except at the summit. The *leaves* are smooth, shining, leathery, and evergreen; the *flowers* green, in drooping, axillary clusters, and in mild weather fragrant; the *berries* black, ovoid, and poisonous. —Woods; not common. If transplanted from the woods and potted, it may be employed with advantage as a stock on which to graft *D. índica*. The operation should be carried out in spring, with the leafy extremity of a shoot rather less in diameter than the stock.—Fl. January—April. Perennial.

ORD. LXVI. ELÆAGNACEÆ.—OLEASTER FAMILY.

A very small Order of shrubs and trees, native to the Northern Hemisphere, covered with scurfy scales; *leaves* undivided, exstipulate; *flowers* diœcious, small,

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rubber. The Australian Asthma Herb (*E. pilulífera* is now imported in considerable quantities. The Manchineel tree (*Hippománê Mancinélla*) of South America has an intensely acrid white juice, the least drop of which, or even the smoke from the wood when burnt, causes temporary blindness; but other alleged actions have been much exaggerated. Its fruit, which is beautiful and looks like an apple, contains a similar juice, which so burns the lips of those who bite it as to guard the careless from any danger of eating it. Manioc (*Manihót utilíssima*) is a shrub about 6 feet high, indigenous to the West Indies and South America, abounding in a milky juice of so poisonous a nature that it has been known to occasion death in a few minutes. It is used by the Indians to poison their arrows. The poisonous principle, however, may be dissipated by heat, after which the root may be converted into the most nourishing food. The roots are sometimes eaten by the Indians, simply roasted; and the heat of the sun even is sufficient to dissipate the noxious properties, for if it be sliced and exposed for some hours to the direct rays of the sun cattle may eat it with perfect safety. It is commonly, however, grated into a pulp and subjected to a heavy pressure until all the juice is drained off. This fresh juice is highly poisonous, but, if boiled with meat and seasoned, makes, under the name of *Cassareep*, an excellent soup, which is wholesome and nutritious. The pulp, which is called *cassava*, requires no further preparation, being simply baked in the form of thin cakes on a hot iron. This bread is so palatable to those who are accustomed to it as to be preferred to that made of wheaten flour. By washing the pulp in water and suffering the latter to stand, a sediment of starch is produced, which, after being dried on hot plates, which partially converts it into dextrine, is the familiar, light, digestible, and nourishing *tapioca*. Caoutchouc, or rubber, is furnished in greater or less abundance by many plants of this Order, but especially by South American species of *Hévea*. The fragrant tonic, Cascarilla Bark, is produced by *Croton Eleuthéria*, a shrub belonging to this Order which is a native of the Bahamas; and the violently cathartic Croton-oil is extracted from the seeds of *C. Tíglium*, a native of the Malabar coast. Castor-oil is expressed from the seeds of *Rícinus communis*, which is frequently grown as an ornamental foliage-plant in English gardens under the name of *Palma-Christi*. The Box is the only British tree belonging to this Order, of the poisonous properties of which it partakes, though to a limited extent. In some parts of Persia it is very abundant; and in these districts it is found impossible to keep camels as the animals are very fond of browsing on the leaves, which kill them. No satisfactory substitute is known for the wood of this tree as material for the wood-engraver.

1. EUPHÓRBIA.—*Involucre* cup-shaped, containing 12 or more *staminate flowers* each of 1 *stamen* and 1 *carpellate flower* with 3-lobed *ovary; styles* 3; *stigmas* 2-cleft; *fruit* 3-chambered, 3-seeded.

2. BÚXUS.—Evergreen shrubs with opposite *leaves; flowers* monœcious, bracteate, axillary; *perianth* of 4—12 leaves; *stamens* 4; *ovary* 3-chambered, 6-seeded.

3. MERCURIÁLIS.—Herbs with opposite, serrate *leaves: flowers* mostly diœcious; *perianth* of 3 leaves; *stamens* 8—20; *ovary* 3-chambered, 2-seeded.

1. EUPHÓRBIA (Spurge).—The British species all herbs with milky juice; *leaves* simple; *flowers* monœcious, in cup-shaped, 4—5-lobed *involucre* with roundish or crescent-shaped glands alternating with the lobes; *staminate flowers* each of 1 pedicellate stamen; *carpellate flower* solitary, drooping, pedicellate, of 3 united *carpels; stigmas* 2-cleft; *fruit* 3-lobed,

3-seeded. (Name from Euphorbus, physician to Juba, an ancient king of Mauritania.)

* *Leaves opposite, stipulate.*

1. *E. Péplis* (Red Spurge).—A prostrate, glabrous, and glaucous plant, beautifully tinged with red, repeatedly forked; *leaves* opposite, stalked, blunt, auricled on one side at the base, thick, ½ in. long; *involucres* axillary, with oblong glands.—Sandy sea-shores in the south; rare.—Fl. July—September. Annual.

** *Leaves exstipulate, generally scattered.*

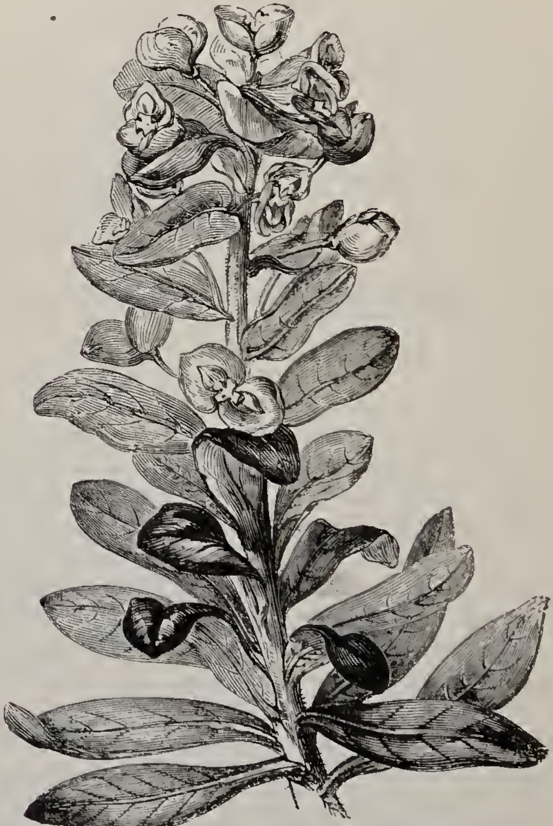
* *Umbels mostly 5-rayed; involucral glands roundish, without cusps.*

2. *E. Helioscópia* (Sun Spurge).—Varying in size from a few inches to 1½ foot in height, generally glabrous, with obovate *leaves* serrate above the middle, and easily distinguished by the golden-green hue of its spreading *umbel*, which is large in proportion to the size of the plant, and has 5 rays which are often repeatedly forked; *capsule* smooth.—Cultivated ground; abundant.—Fl. June—October. Annual.

3. *E. platyphýllos* (Broad-leaved Spurge).—A similar, erect, slightly branched, glabrous or hairy species, with cordate *leaves*, finely serrate above the middle, 3—5-rayed *umbel*, repeatedly forked; 7—8 *staminate flowers* in each involucre; *capsule* covered with hemispherical warts.—Fields, chiefly in the south; rare.—Fl. July—October. Annual.

4. *E. stricta* (Upright Spurge).—Closely allied to the preceding, but more slender, with more ascending branches, erect, 2—3 feet high; with thinner *leaves;* generally 3-rayed *umbel;* rarely more than 2 *staminate flowers* in each involucre; *capsule* only half the

size, with longer, cylindric warts.—Woods on limestone in Gloucestershire and Monmouth; very rare. —Fl. June—August. Annual.



EUPHÓRBIA AMYGDALOÍDES (*Wood Spurge*).

5. *E. hibérna* (Irish Spurge).—A downy plant, 1—2 feet high, scarcely branched, with thin *leaves* 2—4 in. long and an inch or more across, a 5-rayed *umbel* and large *capsules* with cylindric warts.—

Devonshire and Kerry, where it is used to stupefy fish.—Fl. May—June. Perennial.

6.* *E. dúlcis* (Sweet Spurge), an erect species, about a foot high, with obovate blunt *leaves ;* an *umbel* of 5 long, 2-forked rays, with deltoid *bracts;* and a few prominent warts on the *capsule*, occurs only as an escape from cultivation.—Fl. June. Perennial.

7.* *E. coralloídes*, a taller plant with its *stem* leafless below ; *leaves* lanceolate, finely toothed, woolly ; *umbel* of 5, 2—3-forked rays ; and woolly *capsules ;* is also an escape.—Fl. May, June. Biennial.

8. *E. pilósa* (Hairy Spurge).—A tall plant, with its *stem* leafy throughout and branched above ; *leaves* broadly lanceolate, finely toothed mainly near the apex, slightly hairy ; *umbel* irregular, of 4—6 rays, which are first 3-forked and then 2-forked ; *bracts* yellow, elliptical, smooth ; *capsule* usually hairy, with minute warts.—Woods, near Bath ; very rare.—Fl. May, June. Perennial.

** *Umbels 3- or many-rayed ; involucral glands with crescent-shaped cusps.*

9. *E. amygdaloídes* (Wood Spurge).—A shrubby, erect, leafy plant, with obovate-lanceolate, bluish-green *leaves*, hairy beneath, which grows about a foot high the first year, elongating to 2 feet and flowering in the next season, with an *umbel* of 5 or more bifurcating rays, conspicuous in spring and summer with its golden-green *bracts*, which are united into a round cup, generally enclosing 3 *involucres.* A common woodland plant, conspicuous in autumn by the deep crimson tinge of its stems and leaves.—Fl. March, April. Perennial.

10.* *E. Ésula* (Leafy-branched Spurge).—*Rhizome* creeping ; *stem* 1—2 feet high, erect, slender, leafless below, unbranched, or with a few flowerless axillary branches; *leaves* oblong- or linear-lanceolate, sessile, thin, smooth, sometimes denticulate; *umbel* of 10—20, long, slender, forked rays; *bracts* cordate, mucronate, not united; *capsule* rough.—Woods; rare, not indigenous.—Fl. June—August. Perennial.

11.* *E. Cyparíssias* (Cypress Spurge).—A closely allied species, differing in having runners, having more crowded, more glaucous, narrower *leaves*; blunt *bracts*; and almost white *seeds*.—Occurs as an escape in similar situations.—Fl. June, July. Perennial.

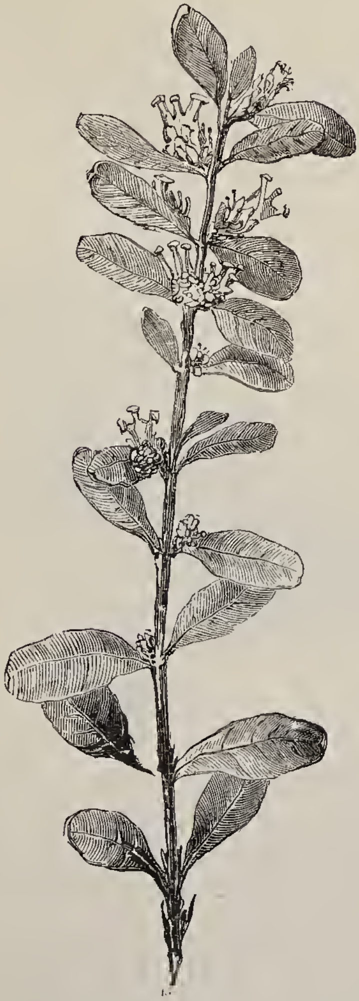
12. *E. Parálias* (Sea Spurge).—A bushy, glaucous plant, often tinged with red; with many short, erect, stout *stems* leafless below; crowded, imbricate, leathery, sessile, oblong, blunt *leaves*; and an *umbel* usually of 5 short, forked rays.—Sandy sea-shores; not common. —Fl. July—October. Perennial.

13. *E. portlándica* (Portland Spurge).—A less robust plant with spreading, leathery, obovate, apiculate *leaves*; *involucral glands* 4, with long cusps; *seeds* brown, pitted.—On the west and south coasts; rare.—Fl. April—September. Perennial.

14. *E. Péplus* (Petty Spurge).—A light green, glabrous, erect species, less than a foot high, with broadly ovate, stalked *leaves*, and repeatedly forked, 3-rayed *umbel*; *bracts* ovate; *involucral glands* 4, with long cusps.—A very common garden weed.—Fl. July —November. Annual.

15. *E. exígua* (Dwarf Spurge).—A more slender little plant, usually branched near the ground, with linear *leaves*: *umbel* of 3—5 forked rays; *bracts* lanceolate. — Cornfields; common. — Fl. June — October. Annual.

16.* *E. Láthyris* (Caper Spurge).—A remarkable plant, 2—3 feet high, succulent, glaucous, tinged with purple, with numerous, spreading, linear-oblong or strap-like *leaves*, opposite and regularly decussate so as to form 4 vertical rows; *umbel* of 3 or 4 stout, unequal, irregularly forked rays; *capsule* very large, smooth, full of milky juice.—Chiefly a garden weed,



BÚXUS SEMPERVÍRENS (*Common Box-tree*).

but perhaps wild in some woods.—Fl. June, July. Biennial.

2. Búxus (Box).—Evergreen trees and shrubs; *leaves* opposite, exstipulate; *flowers* monœcious, axillary, bracteate, the staminate with 2 alternating pairs of perianth-leaves, the carpellate with 6—12 in alternating whorls of 3; *stamens* 4; *ovary* 3-chambered, 3-lobed above; *styles* 3; *ovules* 2 in each chamber; *fruit* capsular. (Name, the Classical Latin name of the tree.)

MERCURIÁLIS PERÉNNIS (*Dog's Mercury*).

1. *B. sempervírens* (Common Box-tree).—The only European species, a small, slow-growing tree, with rough, grey *bark*; *twigs* downy; *leaves* oblong, obtuse, not more than an inch long; *flowers* crowded, sessile, minute, whitish.—Chalk hills in the south, probably indigenous. The juice is bitter and acridly poisonous,

but not milky as in the Spurges. The close-grained, yellow wood, the only European wood which does not float in water, is unequalled for engraving. A dwarf variety is commonly used as an edging for garden borders.—Fl. April, May. Perennial.

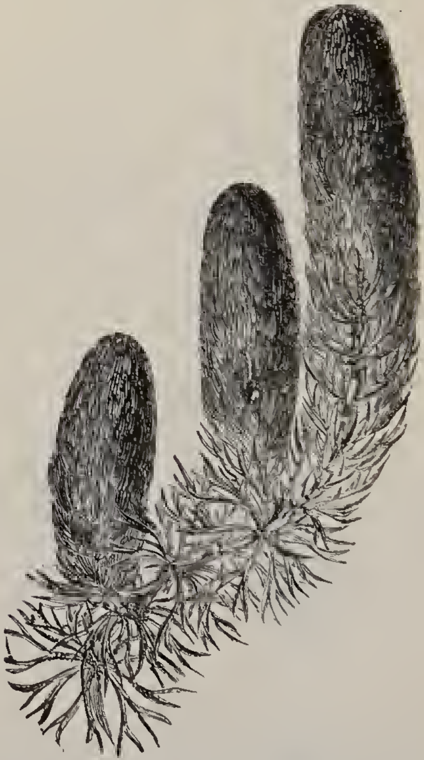
3. MERCURIÁLIS (Mercury).—Herbs with opposite, stalked, serrate, stipulate *leaves*; *flowers* mostly diœcious; *perianth* of 3 leaves; *stamens* 8—20; *ovary* 2-chambered; *styles* 2, long; *ovules* 2; *fruit* capsular. (Name in honour of the heathen god Mercury.)

1. *M. perénnis* (Dog's Mercury).—*Rhizome* slender, creeping; *stem* solitary, erect, about a foot high, unbranched; *leaves* oblong-lanceolate, rough, hairy; *flowers* small, green, on peduncles springing from the axils of the upper leaves, the staminate ones in racemes, the carpellate in spikes.—Woods; abundant. —Fl. April, May. Perennial.

2. *M. ánnua* (Annual Mercury). — A much branched, nearly glabrous species, with sessile *leaves* of a light green, and sometimes with monœcious *flowers*.—Cultivated land; not common.—Fl. July—October. Annual.

ORD. LXXIII. CERATOPHÝLLEÆ.—THE HORNWORT FAMILY.

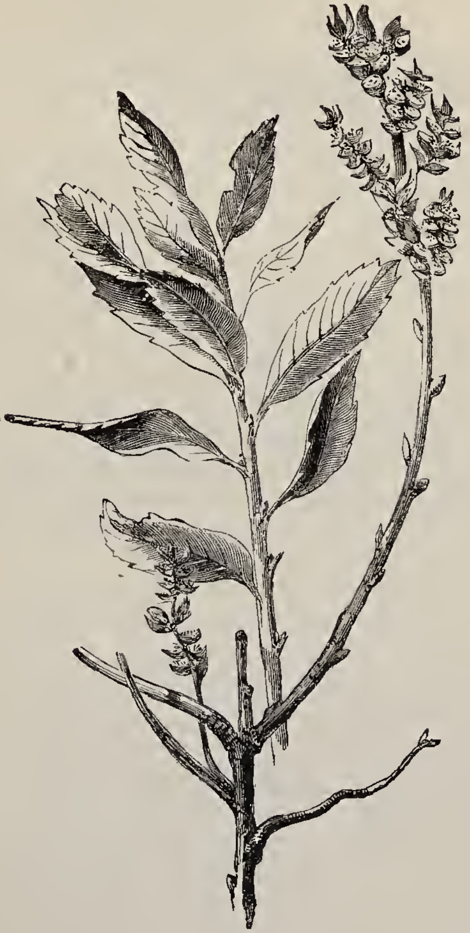
An Order containing only the one genus *Ceratophýllum*, the Hornworts, a group of one or two species of submerged aquatic plants that are unimportant except from their structure, which is so distinct from that of any other known Dicotyledon as to render their affinities doubtful. They have long, slender, brittle, branched *stems*; whorled, sessile, exstipulate *leaves*, which are 2—4 forked into antler-like narrow lobes; and minute, axillary, monœcious *flowers*, enclosed in an 18—2-leaved *involucre* with bristle-like, persistent lobes. The *stamens* are 12—20, without filaments, but with 2 points to each anther; the *ovary* is 1-chambered, 1-ovuled; *style* 1, curved; *fruit* an indehiscent achene, sometimes with 2 spines at its base. (Name from the Greek *keras*, an antler, *phullon*, a leaf, from the form of the leaves.)



CERATOPHÝLLUM DEMÉRSUM (*Common Hornwort*).

1. CERATOPHÝLLUM (Hornwort).
1. *C. demérsum* (Common Hornwort). — *Leaves*

dark green; *fruit* with 2 spines at its base and terminated by the persistent, subulate, curved *style.*



MYRÍCA (*Sweet Gale*).

—Slow streams and ditches, entirely submerged.—Fl. June—September. Perennial.

2. *C. submérsum*, paler green, without spines to the *fruit* and with a shorter *style*, occurs under similar conditions.

§§ *Flowers in catkins.*

ORD. LXXIV. MYRICÁCEÆ.—THE SWEET GALE FAMILY.

A small group of shrubs and trees, widely distributed in temperate and tropical climates, and generally characterised by the excretion of wax. They have scattered, simple *leaves;* generally diœcious *flowers* in catkins; *stamens* 2—16; *ovary* 1-chambered, 1-ovuled; *styles* 2; *fruit* drupe-like, 1-seeded, covered all over with wax. *Myríca cerífera*, the Bayberry, Wax Myrtle, or Candleberry Myrtle of North America, and *M. cordifólia* of South Africa have been used in candle-making. Yang-maes are the edible sub-acid fruit of *M. Nagi*, a native of China and Japan. The aromatic leaves of the one European species, *M. Gálé*, are astringent and tonic and are used for tea and in rustic medicine.

1. MYRÍCA (Sweet Gale).—*Stamens* 4—8. (Name, the Greek name of the Tamarisk.)

1. *M. Gálé* (Sweet Gale, Bog Myrtle).—A bushy, resinous shrub, 2—4 feet high, flowering before leafing; *leaves* obovate-lanceolate, shortly-stalked, serrate towards the apex, fragrant when bruised; *catkins* sessile, erect, the staminate longer; *anthers* and *styles* red; *drupe* minute, 2-winged by the adherent bracts. —Bogs; common.—Fl. May—July. Perennial.

ORD. LXXV. CUPULÍFERÆ.—MAST-BEARING FAMILY.

An Order variously limited by different botanists, but which may be taken as comprising 10 genera and about 400 species of trees and shrubs, widely distributed over the globe and of very great value to man as timber, for bark containing tannin and useful therefore in dressing leather, and for edible seeds. They have scattered, stipulate, simple *leaves*, either evergreen (in foreign species) or deciduous; and monœcious *flowers* which are pollinated by the wind. The *staminate flowers* are generally in pendulous deciduous catkins, with 2—20 *stamens* in each flower; the *carpellate flowers* sessile in an involucre, each generally with a superior 5—6-toothed *perianth*, a 2—3-chambered *ovary*, 2—3 *styles*, and 1 or 2 *ovules* in each chamber. The *fruit* is a dry indehiscent 1- or rarely 2-seeded nut, surrounded by the *cupule* or enlarged involucre, which gives its name to the Order; and the *seeds* are large, exalbuminous, with 2, or rarely 3, fleshy or mealy *cotyledons*.

Cork is the outer bark of *Quércus Súber*, an evergreen species of Oak mainly grown in Northern Spain. Its periodical removal in no way injures the vitality of the tree. The first crop which is cracked and furrowed is known as Virgin Cork. Quercitron, the bark of the North American *Quércus tinctória*, is mainly employed as a yellow dye. The bark of our English Oak (*Q. Róbur*), Valonia, which is the acorn-cups, and Cameta, the young acorns of the Levantine *Q. Ægilops*, are used in tanning; and the galls produced by insect puncture on *Q. infectória* in the same country are one of the chief ingredients of ink. The bark of various species of Birch (*Betula*) is used in Canada for making canoes and moccasins, and in Russia for various utensils, as well as in tanning. The wood of the Alder (*Alnus glutinósa*) is burnt into charcoal for making gunpowder, and that of the Hornbeam (*Carpínus Bétulus*), on account of its toughness, is specially adapted to the manufacture of cog-wheels, as also is that of the American Live Oak (*Quércus vírens*). The wood of the Quebec Birch (*Bétula lénta*) and that of the European *B. verrucósa* are largely used in making furniture, and that of the Beech (*Fágus sylvática*) in Buckinghamshire, in chair-making; whilst it is unnecessary to attempt to enumerate the uses of Oak timber. Chestnuts, the fruit of *Castánea satíva*, are an important article of food in Southern Europe, whilst in many countries acorns and beech-mast are of great value as food for pigs.

Tribe 1. BETULÉÆ.—All *flowers* in catkins; *ovary* of 2 1-ovuled chambers; *fruit* small, compressed.

1. BÉTULA.—*Stamens* 2; *scales of fruit-bearing catkin* thin, deciduous.

2. ALNUS.—*Stamens* 4; *scales of fruit-bearing catkin* woody, persistent.

Tribe 2. CORYLEÆ.—*Staminate flowers* in catkins; *anthers* tufted with hairs; *carpellate flowers* in pairs in axils of leafy bracts; *ovary* 2-chambered; *ovules* 2.

3. CARPÍNUS.—*Fruiting spike* with numerous leafy scales.

4. CÓRYLUS.—*Fruiting spike* with a few brown scales.

Tribe 3. QUERCINÉÆ.—*Staminate flowers* in catkins; *carpellate flowers* 1—3 together in an involucre of numerous bracts, which enlarges in fruit; *ovary* 3—6 chambered; *ovules* 2 in each chamber.

5. QUÉRCUS.—*Staminate flowers* in a slender interrupted catkin; *stigmas* 3.

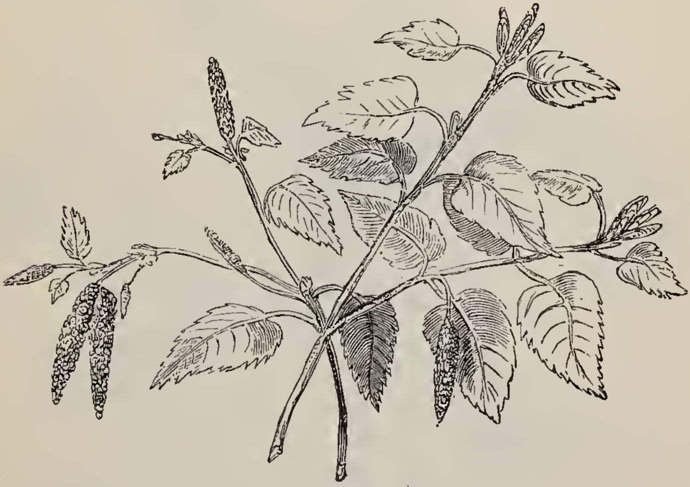
*6. CASTÁNEA. — *Staminate flowers* in a long slender catkin; *stigmas* 6.

7. FÁGUS.—*Staminate flowers* in a globose catkin; *stigmas* 3.

1. BÉTULA (Birch).—Trees and shrubs; *flowers* all in catkins with 3-lobed, deciduous scales; *stamens* 2,

with forked filaments; *ovary* compressed, 2-chambered, 2-ovuled; *fruit* small, winged, 1-seeded. (Name, the Classical Latin name of the tree.)

1. *B. verrucósa* (White Birch).—A beautiful forest tree which has been styled "the Lady of the Woods," with smooth, silvery-white *bark*, scaling off in transverse strips; copper-brown *branches*, often weeping; rhomboid, irregularly serrate *leaves* on long stalks, truncate at their base, and with raised veins on the upper surface; *staminate catkins* 1—2 in. long, pendulous; *fruiting catkins* sub-erect at first, deciduous. —Woods; common.—Fl. April, May. Perennial.



BÉTULA VERRUCÓSA (*White Birch*).

2. *B. pubéscens* (Common Birch).—Often only a bush; *twigs*, and sometimes leaves, downy, or leaves glabrous and resinous; *leaves* always rounded at the base with the veins prominent on the under surface. —Woods; common.—Fl. April, May. Perennial.

3. *B. intermédia*, a small tree with *leaves* smaller,

more orbicular, and more bluntly toothed than the preceding, and *catkins* only ½ in. long, found in the Scottish Highlands, is probably a hybrid between the preceding and the following.

4. *B. nána* (Dwarf Birch).—A small shrub with

ÁLNUS GLUTINÓSA (*Common Alder*)

short-stalked, roundish, crenate, glabrous dark-green *leaves*, and *catkins* not more than ½ in. long.—Mountain bogs in the north; rare.—Fl. May. Perennial.

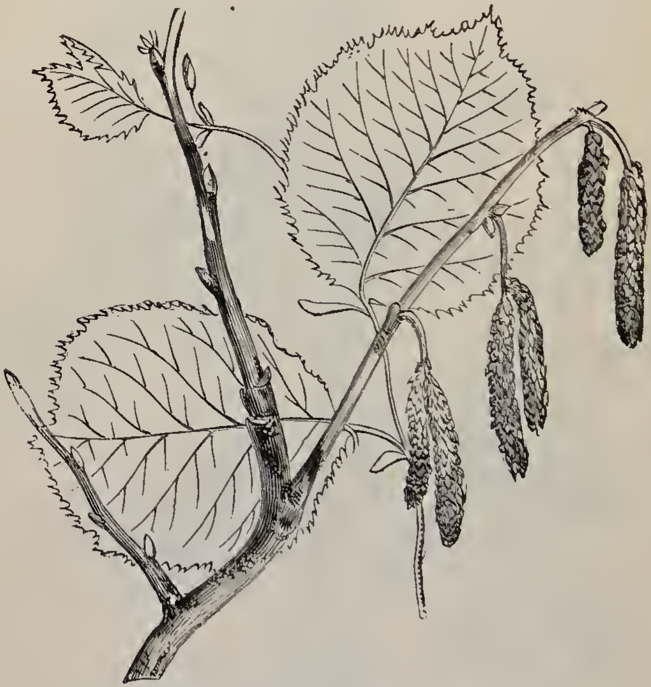
2. Álnus (Alder).—Trees and shrubs; *flowers* all in catkins; *stamens* 3—5; *fruiting catkin* short, with woody, persistent scales. (Name, the Classical Latin name of the tree.)

1. *A. glutinósa* (Common Alder).—The only British species, a small tree with greyish-black *bark; branches* triangular when young; *leaves* shortly stalked, obovate, cuneate, blunt, wavy, serrate, glutinous when young, green on both surfaces; *catkins* appearing before the leaves, and the woody scales of the fruiting ones remaining long on the tree.—Swampy ground

CARPÍNUS BÉTULUS (*Common Hornbeam*).

throughout most of the temperate regions of the globe.—Fl. March—April. Perennial.

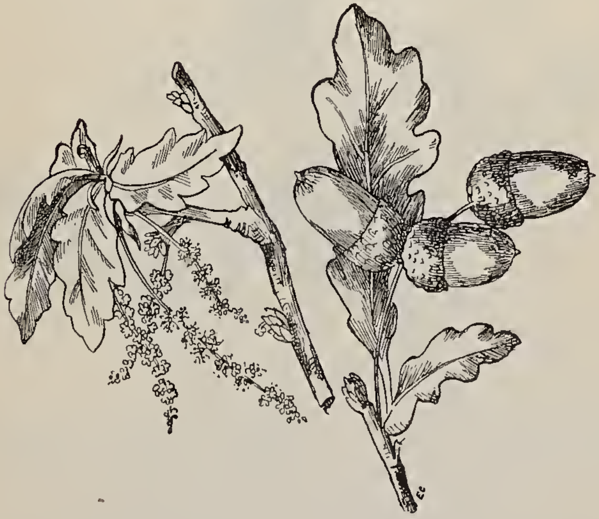
3. Carpínus (Hornbeam).—Trees with deciduous *leaves ; staminate flowers* in catkins ; *stamens* 3—12, with forked filaments and tufts of hair on the anthers ; *carpellate flowers* in pairs in the axils of leafy bracts, forming an erect spike in flower, becoming pendulous in fruit ; *ovary* 2-chambered, 2-ovuled ; *styles* 2. (Name, the Classical Latin name of the tree.)



CÓRYLUS AVELLÁNA (*Common Hazel*).

1. *C. Bétulus* (Common Hornbeam).—A small tree with smooth, light grey *bark;* elliptic-ovate, acute, doubly serrate, strongly plaited parallel to its pinnate veins when in bud; *fruiting-catkins* 2—4 in. long, with large 3-lobed leafy bracts.—Clayey woods in the south; local. Valuable as fuel and for cogs. —Fl. May. Perennial.

4. Córylus (Hazel).—Shrubs or trees with deciduous *leaves; staminate catkins* long, drooping, cylindric; *stamens* 4—8, with short filaments and turfs of hair on the anthers; *carpellate flowers* in pairs in the axils of the upper bracts of a small head; *ovary* 2-chambered, 2-ovuled; *styles* 2, long, slender; *fruit* a woody nut, enclosed in a withering leafy capsule. (Name, the Classical Latin name of the tree, from the Greek *korus*, a cup.)



QUÉRCUS RÓBUR (*Common Oak*).

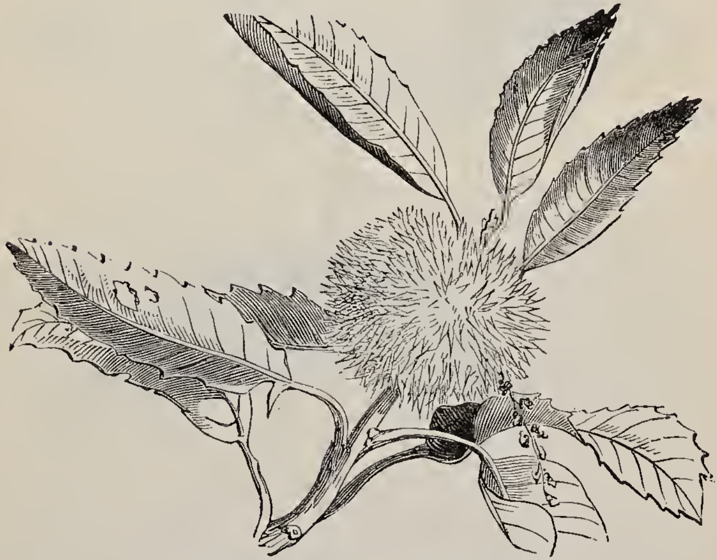
1. *C. Avellána* (Common Hazel).—A shrub or small tree with grey *bark* on stem, brown, hairy, and glandular on shoots; *leaves* roundish, obliquely cordate, irregularly serrate, pointed, plaited parallel to the midrib in bud; *flowers* preceding the leaves; *staminate catkins* 1—2 in. long, drooping, yellow; *carpellate flowers* in small, sessile, ovoid, erect heads, with imbricate *bracts* and crimson *stigmas.* — Woods; abundant.—Fl. February, March. Perennial.

Currant-galls on the Oak.

5. QUÉRCUS (Oak).—Trees with deciduous (or, in foreign species, evergreen) *leaves*; *staminate flowers* in a slender, drooping, interrupted catkin; *stamens* 10, with slender, exserted filaments; *carpellate flowers* few, each enclosed in numerous imbricate scales, forming a cup in the fruit; *ovary* 3-chambered, 6-ovuled; *fruit* or acorn 1-seeded. (Name, the Classical Latin name of the tree.)

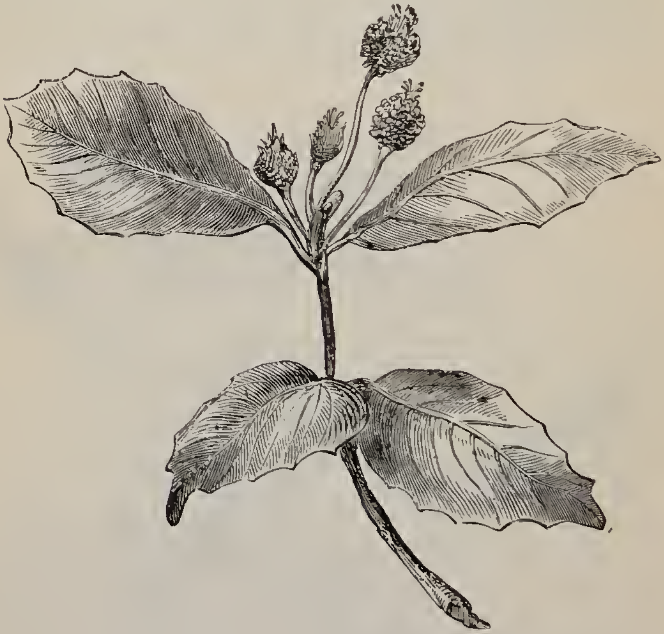
1. *Q. Róbur* (Common Oak).—A large tree, with deeply furrowed, corky *bark; zigzag branches;* obovate-

oblong, sinuate *leaves* with blunt lobes, with or without stalks; *flowers* appearing with the leaves; *cup* with numerous, adpressed, triangular, blunt scales. There are three well-marked varieties: var. *pedunculáta*, the White Oak, with sessile leaves, downy beneath when young, and acorns on long stalks; var. *intermédia*, the Durmast Oak, with short stalks to both leaves and acorns, leaves remaining always downy beneath, and very dark green acorns; and var. *sessiliflóra*, the Red Oak, with downy twigs, long leaf-stalks, leaves smooth beneath, and nearly sessile acorns.—Woods; common. The tree is attacked by numerous insects producing various galls, such as oak-apples, marble-galls, leaf-spangles, artichoke-galls, currant-galls, &c.—Fl. April, May. Perennial.



CASTÁNEA SATÍVA (*Spanish Chestnut*).

*6. Castánea (Chestnut).—Trees with long slender *catkins*, the *staminate* ones erect; *stamens* 8—20; *carpellate flowers* 3 together within a 4-lobed, very prickly cupule; *stigmas* 6; *ovary* 5—8-chambered; *nut* large, surmounted by 6-lobed *perianth*, 1-chambered, 1—3-seeded. (Name, the Classical Latin name of the tree.)



FÁGUS SYLVÁTICA (*Common Beech*).

1.* *C. satíva* (Sweet or Spanish Chestnut).—A large and handsome tree with deeply furrowed bark; glossy, oblong-lanceolate *leaves* with bristly serrations; *catkins* 5—6 in. long.—Parks and plantations; common, but not indigenous.—Fl. May. Perennial.

7. Fágus (Beech).—Trees with deciduous (or, in foreign species, evergreen) *leaves*; *staminate catkins*

globose; *stamens* 8—40, with slender, exserted filaments; *carpellate flowers* 2—4 together within a 4-lobed, prickly cupule; *stigmas* 3; *nut* 3-cornered, enclosed in the enlarged hardened cupule. (Name, the Classical Latin name of the tree.)

1. *F. sylvática* (Common Beech).—A large and beautiful tree with thin, smooth, olive-grey *bark;* long, pointed, chestnut-brown *buds;* glossy, ovate *leaves*, plaited parallel to the pinnate veins in the bud, silky when young.—Woods on dry soil, chiefly in the south.—Fl. April, May. Perennial.

ORD. LXXVI. SALICÍNEÆ.—WILLOW FAMILY.

A small Order of trees and shrubs of very obscure relationships, occurring mostly in the Arctic and North Temperate zone, the more northern forms being dwarf and shrubby. They have scattered, simple, stipulate, deciduous *leaves;* diœcious *flowers* in catkins, commonly appearing before the leaves; *stamens* 2—30; *ovary* 1-chambered; *styles* 2; *ovules* numerous; *fruit* a 2-valved, many-seeded capsule; *seeds* covered with a tuft of silky hairs. The wood of Poplars and Willow grows in general so quickly that it is soft and of little value as timber; but it is used for cricket-bats, charcoal, and for paper-pulp. The flexible shoots of certain species of Willow, known as Osiers, are largely used as wicker-work; and the bark of many species is bitter and astringent, and contains an active principle known as *salicine*, which has some of the properties of quinine as a preventive of fever. There are only two genera in the Order.

1. SÁLIX.—*Catkins* usually erect; *catkin-scales* entire; *stamens* 2—5.

2. PÓPULUS.—*Catkins* drooping; *catkin-scales* cut; *stamens* 4—30.

1. Salix (Willow).—Trees or shrubs; *leaves* of various forms, but usually longer than they are broad, stalked, with prominent stipules; *catkins* usually erect or horizontal; *scales* not cut; *stamens* 2—5, exserted; *stigmas* usually 2-lobed. (Name, the Classical Latin name of the group.)

Shoots of these trees bearing catkins are popularly known as Palms, the staminate ones with their conspicuous yellow anthers, which mature about Easter-time, being called Gold Palm; and the carpellate ones covered with silky down, Silver Pussy-Palms. The 17 or 18 British species are somewhat variable: there is some difference in vegetative characters between the staminate and carpellate trees in each

Staminate catkins of a Willow.

Pistillate catkin of a Willow.

species; and the group is rendered one of the most puzzling in the plant world by the occurrence in a wild state of numerous hybrids. Only the leading types are here described.

* *Leaves convolute; catkins produced with the leaves; filaments free, hairy below; deciduous peduncle bearing leaves; capsule smooth.* (Including the larger trees in the genus.)

1. *S. pentándra* (Bay-leaved Willow).—A shrub or tree, 6—20 feet high, with dark brown *bark;* handsome and fragrant broad, ovate, polished *leaves,* paler beneath; *stamens* 5; *stigma* 2-fid.—River-sides in the north; frequent. The latest flowering Willow.—Fl. May, June. Perennial.

2. *S. triándra* (Almond leaved, French or Brown Norfolk Willow).—Naturally a tree 20—30 feet high, but cut down and treated as an osier; *bark* flaking; *leaves* oblong-lanceolate, 2—4 in. long, serrate, glabrous, paler beneath, with large stipules; *stamens* 3. —River-banks and osier-beds; frequent.—Fl. April, May. Perennial.

3. *S. frágilis* (Crack Willow, Withy).—Growing into a large tree with ascending, easily detached *branches,* but often treated as an osier; very smooth, highly polished, yellow, orange, or crimson *bark;* elliptic-lanceolate, serrate, glabrous *leaves,* 3—6 in. long, pale beneath, hairy beneath, with semicordate stipules; *stamens* 2; *stigma* 2-fid; *capsule* stalked.—Osier-beds; common.—Fl. April, May. Perennial.

4. *S. álba* (White or Huntingdon Willow, White Tree).—A large tree, but often pollarded, with furrowed *bark;* olive-green, silky, not easily detached *twigs;* lanceolate, acuminate *leaves* 2—4 in. long, silky on both surfaces, with small, ovate stipules; *stamens* 2; *stigma* 2-fid, recurved; *capsule* nearly sessile. The Golden Willow (*S. vitellína*) is a form with bright

yellow twigs.—Wet places; common, but often planted.—Fl. April, May. Perennial.

** *Shrubs and small trees, mostly known as Sallows or Osiers; catkins sessile when in flower; bracts on peduncle small or absent; catkin-scales discoloured at the tip; stamens 2; capsule silky.*

5. *S. purpúrea* (Purple Osier, Bitter Willow).—A shrub with slender, tough *twigs;* dark red or purple *bark; catkins* appearing before the leaves, with purple-black hairy scales; *leaves* folded equitantly in bud, lanceolate, serrate, glabrous; *stamens* 2, united; *anthers* purple, becoming black.—River-banks and marshes; frequent.—Fl. April, May. Perennial.

6. *S. viminális* (Common Osier).—A shrub or small tree, with long, slender branches, silky when young, then polished; *catkins* appearing long before the leaves, with brown scales; *leaves* linear-lanceolate, acuminate, 4—10 in. long, with revolute, wavy margins, silky beneath, with small, lanceolate stipules; *stamens* 2; *anthers* yellow; *style* long.—Wet places and osier-beds; common.—Fl. April—June. Perennial.

7. *S. Lappónum* (Downy Mountain Willow).—A dwarf shrub, with stout, brown *branches;* woolly *buds; catkins* preceding the leaves, with black scales with long, white hairs; *leaves* elliptic-lanceolate, shaggy on both surfaces, with revolute margins and small or absent stipules; *stamens* 2; *anthers* yellow.—Highland mountains; rare.—Fl. June, July. Perennial.

8. *S. Cáprea* (Goat Willow, Great Sallow).—A small tree, with smooth buds; *catkins* preceding the leaves, with hairy scales black at the tip; *leaves* broad, ovate, flat, with wavy, crenate-serrate margins, cottony beneath; *stamens* 2; *anthers* yellow; *style* very short; *capsule* with a slender stalk.—Dryish places; common.—Fl. April, May. Perennial.

9. *S. auríta* (Round-eared Sallow).—A form closely allied to the following, distinguished by its small size, not exceeding 4 feet in height; reddish *twigs;* much wrinkled, obovate leaves, downy on both surfaces, reddish when young, with large, kidney-shaped, stalked stipules.—Damp woods; common.—Fl. April, May. Perennial.

10. *S. cinérea* (Common Sallow).—A large shrub or small tree, closely allied to *S. Cáprea*, but with downy *buds* and *twigs;* glaucous, obovate-lanceolate *leaves*, with reddish-brown hairs beneath, and large, semicordate stipules; *anthers* pale yellow.—Damp places; common. The earliest flowering British Willow.—Fl. March, April. Perennial.

11. *S. phylicifólia* (Tea-leaved Willow).—A handsome bush or small tree with spreading, bright chestnut *branches* and shining green *leaves*, glaucous beneath, ovate, with very small or absent stipules; *catkins* sessile, with black, acute scales; *style* long; *capsule* stalked.—By mountain streams in the north.—Fl. April—June. Perennial.

12. *S. Arbúscula* (Small Tree Willow).—A small, stiff, prostrate shrub, with yellow, downy *twigs*, becoming brown; ovate, smooth, finely serrate *leaves*, silky and glaucous beneath; sessile, bracteate *catkins*, with rounded, reddish, downy scales, preceding the leaves; *style* long; *capsule* nearly sessile.—Scottish mountains; rare.—Fl. June, July. Perennial.

13. *S. répens* (Dwarf Silky Willow).—A small, straggling bush with slender *branches;* silky *buds;* small *leaves*, variable in shape, silky when young and on the under surface, shining above, with revolute margins and lanceolate or absent stipules; *catkins* short, on leafy peduncles, with silky scales; *anthers* yellow, becoming black; *style* short; *capsule* stalked.—Heaths; common.—Fl. April, May. Perennial.

14. *S. lanáta* (Woolly Broad-leaved Willow).—A beautiful little shrub with zigzag *branches;* downy

twigs; large, black, hairy buds; broadly oval, leathery *leaves*, shaggy beneath, with large, semicordate stipules; and *catkins* with long, golden hairs.—Occurs by mountain streams in the North of Scotland; rare.—Fl. May, June. Perennial.

*** *Small bushes; catkins on long leafy, not deciduous shoots; stamens* 2.

15. *S. Myrsinítes* (Whortle-leaved Willow).—A small, stiff shrub with silky *shoots;* small, stiff, dark green, glossy, serrate, short-stalked *leaves; catkin-scales* blackish; *capsules* hairy.—Highland mountains; rare.—Fl. June, July. Perennial.

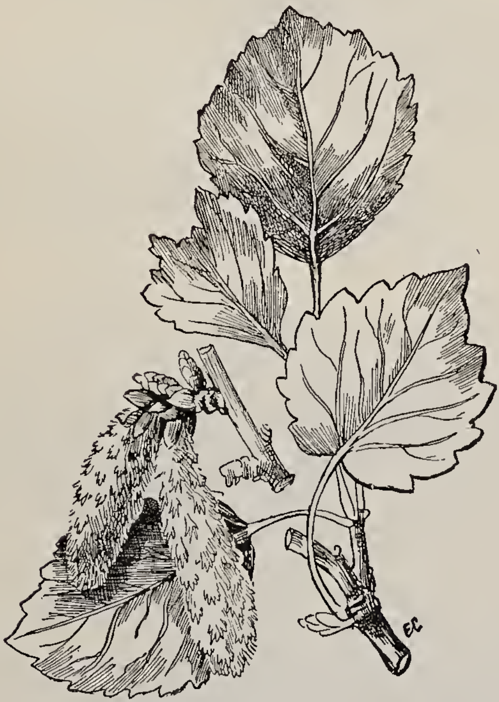
16. *S. herbácea* (Least Willow).—A minute, herb-like shrub with its *stems* spreading amongst stones or under the turf and sending up short *twigs*, 2—6 in. high, with brown *buds* a few round, blunt, serrate, shining, ciliate *leaves;* and small terminal *catkins* on 2-leaved peduncles.—Lofty mountain tops; not uncommon.—Fl. June. Perennial.

17. *S. reticuláta* (Reticulate Willow).—A similar, but larger, buried form, much branched, with *leaves* strongly netted with veins on both surfaces; and much larger, subterminal *catkins* on long leafy peduncles.—Scottish Highland mountains; rare.—Fl. June—August. Perennial.

2. Pópulus (Poplar).—Large trees with broad *leaves* on long vertically compressed stalks; drooping *catkins* with jagged scales; *disk* cup-shaped; *stamens* 4—30, not united; *stigmas* 2—4-lobed. (Name, the Classical Latin name of the tree and, in spite of a difference in the quantity of the *o*, considered in both ancient Rome and modern France to be *the tree of the people.*)

1. *P. álba* (White Poplar, Abele).—A large tree

with smooth grey *bark;* many *suckers*; spreading *branches*; downy *buds* and *shoots; leaves* cottony and snowy white beneath, cordate, more or less palmately lobed; *stamens* 6—10; *anthers* red; *stigmas* cruciform, yellow.—Damp woods; frequent, but often planted.—Fl. March, April. Perennial.



PÓPULUS TRÉMULA (*Aspen*).

2. *P. canéscens* (Grey Poplar).—*Leaves* not lobed, with the exception of the youngest, slightly cottony and grey beneath; *stigmas* 2, wedge-shaped, 2—4-lobed, purple.—Damp woods; not common. Possibly a hybrid between the preceding and the following species.—Fl. March, April. Perennial.

3. *P. trémula* (Aspen).—A tree with grey *bark;* many downy *suckers;* spreading *branches;* downy *buds* and *shoots; leaves* nearly round, acute, cordate, serrate, glabrous on both surfaces, or downy when young; *stigmas* 2, 2-fid, erect.—Woods; common.—Fl. March, April. Perennial.

4.* *P. nígra* (Black Poplar).—A large tree with grey *bark;* no *suckers;* spreading *branches;* sticky *buds;* glabrous *shoots;* rhomboid, serrate *leaves*, glabrous on both surfaces, silky beneath when young; *stamens* 12—20; *anthers* red; *stigmas* 2, roundish, 2-fid. — River-banks; not indigenous.—Fl. March, April. Perennial.

Class II. MONOCOTYLEDONS.

In the plants belonging to this Class the *embryo* of the seed has only a single *cotyledon* or seed-leaf. Though in their earlier stages Palms develop a *radicle* or tap-root, no British representatives of the Class do so; nor, with the one exception of the Butcher's Broom (*Ruscus aculeátus*), do they form woody stems. They have generally bunches of fibrous roots; their stems are often bulbs or corms, and are not commonly much branched. Internally there is no distinct *pith*, separable *bark*, or annual rings of wood or bast, the vessels being grouped in scattered bundles which are most numerous near the outside of the stem, which, in consequence, is hardest near the exterior and sometimes hollow in the centre, especially among the Grasses. The *leaves* are generally simple, entire, and smooth, with parallel *veins*, or a regular network formed by transverse veins which are much finer than the longitudinal ones. The *flowers* are often destitute of a perianth, the place of which is supplied by hard, chaffy scales known as *glumes*. The *sepals* and *petals*, when present, the *stamens* and the *carpels* are generally 3, or some multiple of 3, in number.

SUB-CLASS I. PETALOÍDEÆ.

Flowers usually furnished with a petaloid and coloured, not a green or glumaceous, perianth.

SERIES I. EPÍGYNÆ.—ORD. LXXVII.—LXXXI.

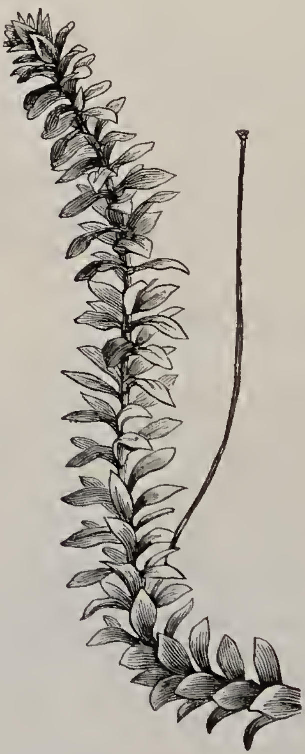
Perianth superior; *ovary* inferior.

ORD. LXXVII. HYDROCHARÍDEÆ.—THE FROG-BIT FAMILY.

A small Order of aquatic plants, often floating, with conspicuous, polysymmetric, diœcious *flowers*, enclosed, when in bud, in a sheath, or *spathe ; sepals* 3, green; *petals* 3; *stamens* 3—12; *carpels* 3—6, united into an inferior, 1- or many-chambered *ovary ; style* 1; *stigmas* 3—9; *fruit* indehiscent, generally a berry, 1- or many-chambered. Only three members of the Order occur in Britain, belonging to three different genera.

*1. ELODÉA.—*Leaves* submerged, linear, whorled.
2. HYDRÓCHARIS.—*Leaves* orbicular, floating.
3. STRATIÓTES.—*Leaves* submerged, sword-shaped, serrate.

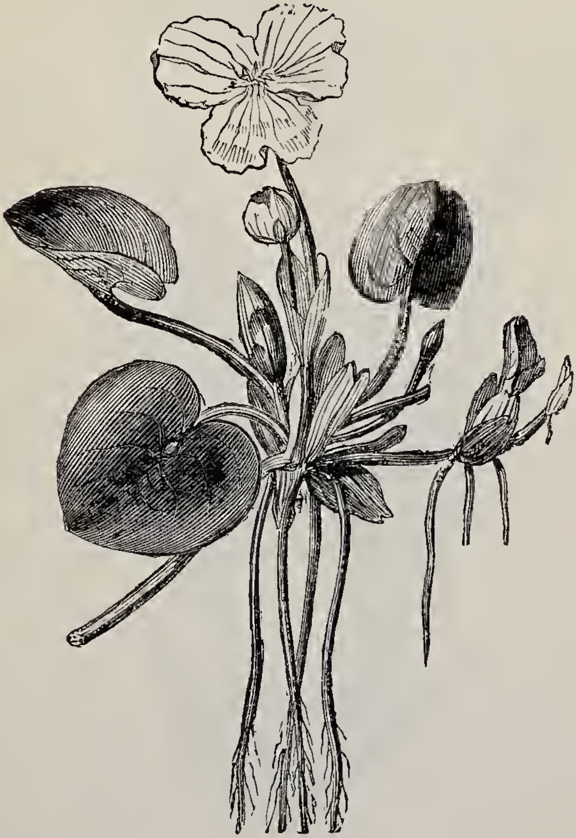
*1. ELODÉA CANADÉNSIS (American Water-weed, Water-thyme).—A submerged, dark green, translucent plant, with a long, slender, branching, brittle *stem*, rooting at its nodes; *leaves* in whorls of 3, linear-oblong, finely serrate; *flowers* floating, small, pink, diœcious, only the carpellate form commonly occurring, which has a very slender *perianth-tube* 4—8 in. long; 3 *sepals*; 3 *petals*; 3 *staminodes*; *ovary* 1-chambered; *style* slender; *stigmas* 3, ligulate.—Rivers, canals, and ponds; common. Introduced from America between 1836 and 1841. (Name from the Greek *helódes*, swampy).



ELODÉA CANADÉNSIS (*American Water-weed*).

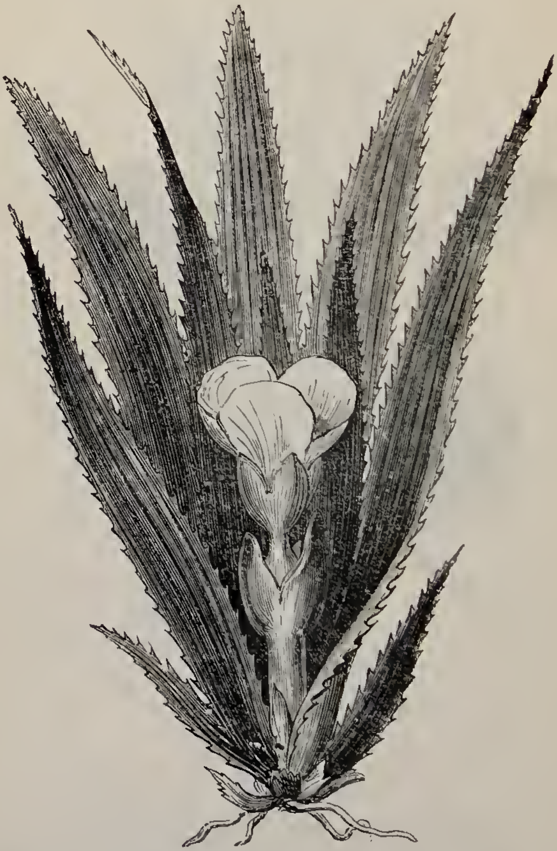
2. HYDRÓCHARIS (Frog-bit), represented only by the one species *H. Mórsus-ránæ*, a floating plant with

creeping *stems;* roundish, cordate, stalked, floating *leaves;* and delicate white *flowers* which grow 2—3 together from a pellucid 2-leaved *spathe; stamens* 9—12; *ovary* 6-chambered, many ovules; *styles* 6.—Ponds and ditches; not general. The cells of the seed-coat gelatinise in water and emit their spiral thickening. (Name from the Greek *húdor*, water, and *cháris*, elegance.)—Fl. July, August. Perennial.



HYDRÓCHARIS MÓRSUS-RÁNÆ (*Frog-bit*).

3. Stratiótes (Water Soldier), represented only by the one species *S. aloïdes*, a submerged plant with runners creeping in the mud; its *leaves* all radical, stiff, ascending, sword-shaped, spinously serrate like those of an Aloe, brittle, dark green; *flower-stalk* 5—6 in. high, bearing at its summit a 2-leaved sheath, containing either several delicate white *staminate flowers*,



STRATIÓTES ALÓIDES (*Water Soldier*).

each with 12 or more *stamens* and numerous staminodes, or one *carpellate flower* with 6 2-fid *styles* and a 6-chambered, many-ovuled *ovary*.—Ponds and ditches in the North and East of England; rare. The plant rises to the surface before flowering and then sinks to the bottom. (Name from the Greek *stratiótes*, a soldier, from the sword-like leaves.)—Fl. June—August. Perennial.

ORD. LXXVIII. ORCHÍDEÆ.—THE ORCHID FAMILY.

A very extensive and most interesting Order of perennial herbaceous plants. They are to be found in all climates except the very coldest and driest; but are most abundant in hot, damp, equatorial regions, where they exist in the greatest profusion, not, as in temperate climates, deriving their nourishment from the earth, but from the moisture in the air. These *epiphytes*, as they are termed, cling to the trunks and branches of trees, to the stems of large ferns, or to the bare rock. In many of them the large and often gorgeously-coloured flowers are the only conspicuous part of the plant. They have greyish-green aërial roots which are furnished with a peculiar superficial structure adapted to the absorption of atmospheric moisture, and clustered, elliptical branches known as *pseudobulbs*, from the summit of which spring a few green, leathery leaves, and slender peduncles which hardly seem capable of producing the numerous blossoms, beautiful in form and colour, which they are destined shortly to bear. The British species have mostly rounded or palmate *root-tubers*, two or more glossy sheathing *leaves*, and a simple spike or raceme of *flowers*, which are in most cases red, pink, white, or greenish. They have 3 *sepals*, often petaloid; and 3 *petals*, the lowest unlike the rest, and frequently spurred. The structure of this lower lip of the corolla, or *labellum*, is often most singular, resembling some insect or presenting a fantastic caricature of some more important member of the animal kingdom. "There is," says Lindley, "scarcely a common reptile or insect to which some of them have not been likened." The *stamens* are united to the *style* into a central *column*, only one, or rarely two, of them producing *pollen*, which, though sometimes powdery, is commonly united into 2 club-shaped masses, or *pollinia*, one in each chamber of the anther. The *ovary* is inferior, and often so twisted as to invert the flower, and so long as to be mistaken for a pedicel; it is 1-chambered, with 3 parietal placentas. The *stigma* is a viscid hollow in front of the column; and the *fruit* a 3-valved, many-seeded, capsule. The floral structure of the Order is, in spite of the varied form of the labellum, very uniform, and, in most species, clearly adapted to secure insect-pollination. The flowers have, in many cases, powerful odours and secrete honey; but in the spurred forms this honey is within the tissue of the spur, instead of being, as in other groups, in the cavity of the spur. The insect seeking honey is thus delayed by the necessity of boring for it, and meanwhile the stickiness of a gland, or *retinaculum*, at the base of the pollinium has time to set on the insect's head. The whole pollinium is thus removed from the anther, and, in some cases, while being borne to some other blossom, it bends, so as more effectually to strike against the stigma. As only a part of the pollinium is torn off by the viscidity of the stigma, the insect may thus pollinate many blossoms. The spur of *Angræcum sesquipedálé*, a native of Madagascar, is no less than 9 inches long; but, as foretold by Darwin, hawk-moth has been found in the same island with a proboscis of even greater length. In some species the labellum is irritable. In *Caleána nigríta*, for instance, the column is a boat-shaped box resembling a lower lip, and the labellum forms a lid that exactly fits it, and is hinged on a claw which reaches the middle of the column. When the flower opens, the labellum turns round within the column, and falls back, so that, the flower being inverted, it stands fairly over the latter. The moment a small insect touches its point, the labellum makes a sudden revolution, brings the point to the bottom of the column, and thus makes prisoner for a time any insect which the box will hold. With the exception of Vanilla, the long, dried pods of *Vanílla planifólia* and other species of that climbing genus, which is now extensively cultivated throughout the Tropics for the sake of the crystallisable aromatic substance *vanillin*, which renders it valuable as a flavouring for chocolate and other sweetmeats, no plant of this Order is extensively used in the arts. On account of their beauty and singular aspect, however, great attention has of late years been paid to the cultivation of exotic orchids; and by imitating their natural conditions of heat and moisture great success has been attained. If an orchid-house be well managed, some one or other of these curious air-plants may be seen in bloom at all seasons of the year, clinging to bits of wood or virgin cork, or simply suspended by wires from the roof.

* *Anther* 1 *only.*

1. Maláxis.—A leafy plant; *flowers* stalked, not inverted; *lip* posterior, not spurred, entire; *column* short; *pollinia* 4, waxy, on one gland.

2. Líparis.—Leafy plants; *flowers* stalked; *lip* anterior, not spurred, entire; *column* long; *pollinia* 4, waxy.

3. Corallorhíza.—Brown saprophytes; *flowers* stalked, yellowish-green; *lip* anterior, 3-lobed, minutely spurred, white with red spots; *column* short; *pollinia* 4, free.

4. Neóttia.—Brown saprophytes; *flowers* stalked, light brown, hooded; *lip* anterior, 2-lobed, pouched; *column* long; *pollinia* 2, united; *pollen* powdery.

5. Lístera.—*Leaves* 2, opposite; *flowers* stalked, green; *lip* anterior, 2—4-lobed, not spurred; *column* very short; *pollinia* 2, united; *pollen* powdery.

6. Spiránthes.—Leafy plants; *flowers* not stalked, in a spiral spike; *lip* anterior, not spurred, entire; *pollinia* 2, united; *pollen* powdery.

7. Goodyéra.—Leafy plants; *flowers* not stalked, in a spiral spike; *lip* anterior, pouched, entire; *pollinia* 2, united; *pollen* loosely coherent.

8. Epipógum.—Brown saprophytes; *flowers* stalked, pale yellow, not inverted; *lip* posterior, 3-lobed, with a short, inflated spur; *pollinia* 2, united; *pollen* granular.

9. Cephalánthera. — Leafy plants; *flowers* not stalked, erect, *lip* anterior, constricted and lobed, pouched; *column* long; *pollinia* 2, united; *ovary* twisted.

10. Epipáctis. — Leafy plants; *flowers* stalked, drooping; *lip* anterior, constricted and lobed; *column* short; *pollinia* 2, united; *ovary* straight; *pedicel* twisted.

11. Órchis.—Leafy plants; *flowers* not stalked, hooded; *lip* anterior, 3-lobed, spurred; *pollinia* 2, distinct, with their glands in one pouch.

12. Áceras.—Leafy plants; *flowers* not stalked, hooded; *lip* anterior, 4-lobed, not spurred; *pollinia* 2, with their glands in one pouch.

13. Óphrys.—Leafy plants; *flowers* not stalked; *lip* anterior, variously lobed, not spurred; *pollinia* 2, with their glands in distinct pouches.

14. Hermínium.—Leafy plants; *flowers* not stalked; *lip* anterior, 3-lobed, pouched; *pollinia* 2, distinct, on naked glands.

15. Habenária.—Leafy plants; *flowers* not stalked; hooded; *lip* anterior, spurred; *pollinia* 2, distinct, on naked glands.

** *Anthers* 2.

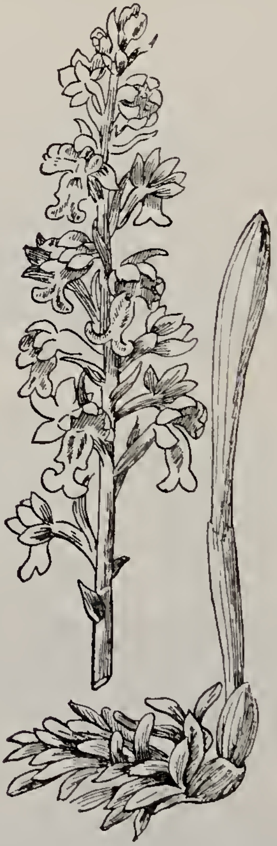
16. CYPRIPÉDIUM.—Leafy plants; *perianth* spreading; *lip* large, inflated; *pollen* granular; *ovary* not twisted.

1. MALÁXIS (Bog Orchis), a genus containing only the one species *M. paludósa*, the smallest British orchid, 2—4 in. high, with angular *stem;* 3—5 oval *leaves*, fringed with bulbils that grow into new plants; and numerous minute, yellowish-green *flowers* on twsited stalks, in a dense raceme.—In bog-moss; uncommon. Growing as an epiphyte on the moss, and easily overlooked. (Name from the Greek *malaxis*, softening.)—Fl. July—September. Perennial.

2. LÍPARIS.—Very similar little plants, with usually only 2 *leaves*, inverted *flowers* on twisted stalks and a longer, slender *column*. (Name from the Greek *liparos*, greasy.)
1. *L. Loesélii* (Two-leaved Liparis, Fen Orchis).—The only British species, with 2 oblong-lanceolate, acute, stalked, radical *leaves;* a triangular *peduncle*, 4—8 in. high; and 6—12 yellowish *flowers* on twisted pedicels in a loose raceme.—On bog-moss in the eastern counties; very rare. An epiphyte.—Fl. June, July. Perennial.

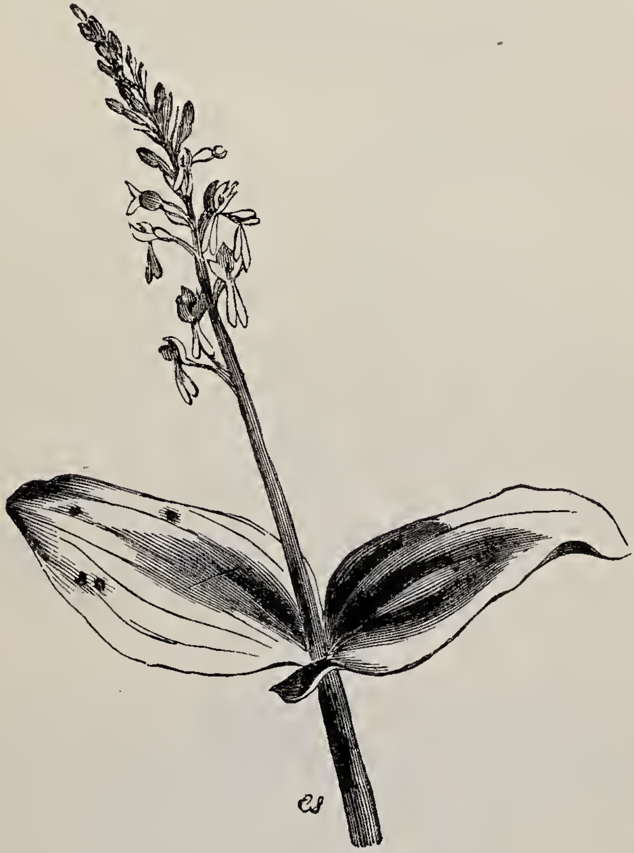
3. CORALLORHÍZA (Coral-root).—Brown plants, living in decaying vegetable matter, without true *roots* or *leaves*, but with a fleshy underground *stem* with interlacing branches resembling coral; brown, sheathing *leaf-scales;* a few small, stalked *flowers*, with a 3-lobed *lip* with a minute spur united to the ovary; a short *column;* and 4 distinct *pollinia*. (Name from the Greek *korállion*, coral, *rhiza*, root.)

1 *C. innáta* (Spurless Coral-root).—The only British species, a curious brown plant, 6—10 in. high, with a few *leaf-scales* and a loose raceme of 4—8 small, yellowish-green *flowers* with a white lip with red warts on it.—Boggy woods in Scotland; very rare.—Fl. July, August. Perennial.



NEÓTTIA NÍDUS-ÁVIS (*Bird's-nest Orchis*).

4. Neóttia (Bird's-nest Orchis).—Brown saprophytes, with sheathing *leaf-scales ; flowers* brown, in a raceme ; *sepals* and *lateral petals* forming a hood ; *lip* 2-lobed, pouched at its base. (Name from the Greek *neottia*, a bird's nest, from the interlacing fleshy roots.)



LÍSTERA OVÁTA (*Twayblade*).

1. *N. Nídus-ávis* (Bird's-nest Orchis).—The only

British species, a pale brown plant, about a foot high, with a *root* of many interlacing fleshy fibres, from the extremities of which the young plants are produced; numerous brown *leaf-scales* and brown, stalked *flowers.*—Shady woods, especially among fallen Beech leaves; frequent.—Fl. June, July. Perennial.

5. LÍSTERA (Twayblade).—*Root* of fleshy fibres; *leaves* 2, opposite; *flowers* stalked, green; *sepals* and *lateral petals* spreading; *lip* anterior, 2—4-lobed, not spurred. (Named in honour of Dr. Martin Lister, an English naturalist.)

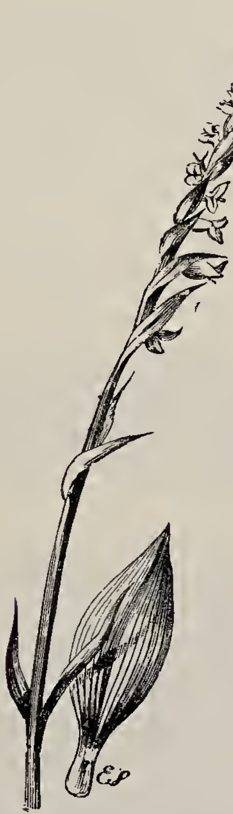
1. *L. cordáta* (Lesser or Heart-leaved Twayblade).—A small, glabrous plant, 4—8 in. high; *stem* angular, slender; *leaves* sessile, membranous, ovate-cordate, acute; *flowers* few, small, greenish, in a loose raceme; *lip* 4-lobed.—Mountain moors; uncommon.—Fl. June—September. Perennial.

2. *L. ováta* (Twayblade).—A coarse, pubescent plant, 1—2 feet high, with a tapering *stem* round in section; large, broadly ovate, strongly ribbed *leaves;* and a long raceme of yellowish-green *flowers* with a 2-lobed lip.—Woods and orchards; common.—Fl. May—July. Perennial.

6. SPIRÁNTHES (Lady's Tresses).—*Root* tuberous; *stem* leafy; *flowers* in a spirally-twisted spike; *lip* not spurred, united to the base of the column; *pollen* powdery. (Name from the Greek *speira*, a spiral, *anthos*, a flower.)

1. *S. autumnális* (Autumn Lady's Tresses).—*Root* of 2 or 3 ovoid tubers; *stem* 4—8 in. high, slender, slightly pubescent; *radical leaves* ovate, acute; *flowers* in a close spiral, white, fragrant in the evening.—Dry downs; not uncommon. The flowers are arranged n a single row and the spiral turns either from left to

right or from right to left. The leaves form a tuft just above the crown of the root, and wither before the flowers begin to expand. These are succeeded by a tuft of new leaves which arise from the base of the old stem.—Fl. August—October. Perennial.



SPIRÁNTHES AUTUMNÁLIS (*Autumn Lady's Tresses*).

2. *S. æstivális* (Summer Lady's Tresses).—*Root* of several cylindrical tubers; *stem* 6—18 in. high, glabrous; *radical leaves* on the flowering stem, not in

a lateral rosette; *flowers* more numerous, larger and more loosely arranged than in the preceding.—Bogs in the New Forest and Wyre Forest, Worcester; very rare.—Fl. July, August.

3. *S. Romanzoffiána*, a stout, leafy species, with much larger *flowers* in 3 spiral rows, is found in the south-west of Cork.—Fl. August, September. Perennial.

7. GOODYÉRA.—Closely allied to *Spiránthes*, but with a creeping *rhizome*, generally stalked *leaves*, and a pouch at the base of the *lip*. (Named in honour of John Goodyer, an English botanist of the 16th and 17th centuries.)

1. *G. répens* (Creeping Goodyera).—A creeping species with a slender *stem* 4—8 in. high; stalked, ovate, acute *leaves* with a network of veins, pubescent below; *flowers* small, white, in a slender, spiral spike with linear, appressed *bracts* and glandular hairs.—Fir woods, chiefly in East Scotland.—Fl. July, August. Perennial.

8. EPIPÓGUM, represented by one species, *E. aphýllum*, is a brown saprophyte with stalked, pale yellow *flowers* which are not inverted, and have a short inflated spur to their *lip*.—It has only once been found in a damp wood in Herefordshire. (Name from the Greek *epi*, up, *pogón*, lip, the lip of the flower being uppermost.

9. CEPHALÁNTHERA (Helleborine).—Leafy plants with a creeping *rhizome;* nearly distichous *leaves; flowers* in a few-flowered spike, not stalked, erect; *lip* anterior, constricted, lobed, and pouched; *column* long; *ovary* twisted. (Name from the Greek *kephalé*, head, *anthera*, anther, the anther forming a head to the column.)

1. *C. rúbra* (Red Helleborine).—A slender plant about a foot high, with lanceolate acute *leaves* and red *flowers* with downy *ovaries* shorter than the bracts.—Woods on limestone in Gloucestershire; very rare. —Fl. June, July. Perennial.

2. *C. ensifólia* (Narrow-leaved Helleborine).—A very similar but taller plant, with white *flowers* and smooth *ovaries* which are longer than the *bracts.*—Woods; local.—Fl. May, June. Perennial.

3. *C. pállens* (White Helleborine).—*Stem* 1—2 feet high; *leaves* 3—6 in. long, ovate-oblong, *upper* narrower; *flowers* rather large, milk-white, cup-shaped, in a loose spike; *ovary* smooth, shorter than the *bracts.* —Woods on calcareous soil; rare.—Fl. June. Perennial.

10. Epipáctis (Helleborine).—A genus closely allied to the preceding, but with drooping *flowers* on twisted *pedicels,* with short *columns* and straight *ovaries.* (Name of Greek origin, but of uncertain application.)

1. *E. latifólia* (Broad-leaved Helleborine).—*Stem* 1—3 feet high, solitary, downy; *leaves* broadly ovate, ribbed; *flowers* green with a red lip, shortly stalked, in a long, loose, 1-sided raceme; tip of *lip* roundish-cordate with a small recurved point; *ovary* downy, shorter than the green *bracts.*—Hilly woods; common.—Fl. August. Perennial.

2. *E. média,* a closely allied form, with longer and narrower *leaves* and tip of *lip* triangular-cordate, acute.—Woods; local.—Fl. August. Perennial.

3. *E. violácea,* another closely allied form, has many clustered *stems,* which, together with the *leaves,* are much tinged with red; yellow-green *flowers* tinged with pink; and the tip of the *lip* triangular-ovate, acuminate.—Woods in the South of England; rare.—Fl. August. Perennial.

4. *E. atrorúbens* (Dark-flowered Helleborine).—*Stem* solitary, about a foot high; with smaller, ovate-lanceolate, acute *leaves; flowers* small, varying from dark yellow to a dingy blackish-red; tip of *lip* broader than long, rounded, with a short, abrupt point.—Limestone cliffs, chiefly in the north; rare.—Fl. July. Perennial.

5. *E. palústris* (Marsh Helleborine).—*Stem* about a foot high, downy; *leaves* lanceolate-acute; *flowers* few; *sepals* green, striped with red; *petals* white, striped with red; tip of *lip* blunt, crenate; *bracts* shorter than the flowers.—Marshes; not uncommon. —Fl. July, August. Perennial.

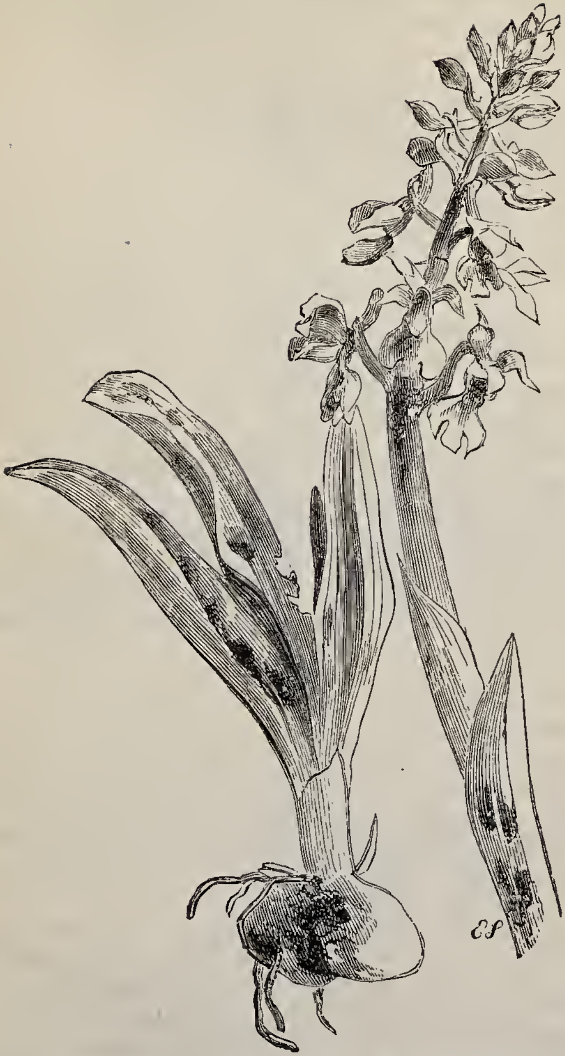
11. Órchis. — Herbaceous plants with tuberous *roots; leaves* mostly radical, sessile, and sheathing; *flowers* not stalked, with a hood formed of the lateral *petals; lip* anterior, 3-lobed, with an empty spur; *pollinia* 2, distinct, with their glands in one pouch. (Name, the Greek name of the genus.)

* *Tubers ovoid.*

1. *O. hircína* (Lizard Orchis).—*Stem* 1—3 feet high; *flowers* large, in a loose spike; *sepals* and lateral *petals* green, spotted with red; *lip* over an inch long, strap-shaped, spirally coiled in bud, white, with red spots.—Woods on chalk in Kent and Suffolk; very rare. The flowers have an unpleasant goat-like smell. —Fl. May. Perennial.

2. *O. pyramidális* (Pyramidal Orchis).—*Stem* 6—18 in. high; *leaves* lanceolate, acute; *flowers* small, deep rose-colour, rarely white, in a dense pyramidal spike; *lip* with 3 equal, oblong, truncate lobes, and a slender spur longer than the ovary.—Limestone pastures; frequent.—Fl. July, August. Perennial.

3. *O. ustuláta* (Dark-winged or Dwarf Orchis.)—



ÓRCHIS MÁSCULA (*Early Purple Orchis*).

Stem 4—6 in. high; *leaves* oblong, acute; *flowers* many, small, in a dense oblong spike, dark crimson at first, and, therefore, at the top of the spike, becoming white later, that is, lower down; *spur* much shorter than the ovary.—Upland calcareous pastures; not common.—Fl. May, June. Perennial.

4. *O. purpúrea* (Great Brown-winged Orchis).—*Stem* stout, 1—3 feet high; *leaves* oblong, blunt; *flowers* in a dense spike, greenish-red, with a dark *hood*, light rose-coloured, 4-lobed, flat *lip*, with raised, rough, red points, and short *spur*.—Woods on chalk in Kent and Sussex; rare.—Fl. May. Perennial.

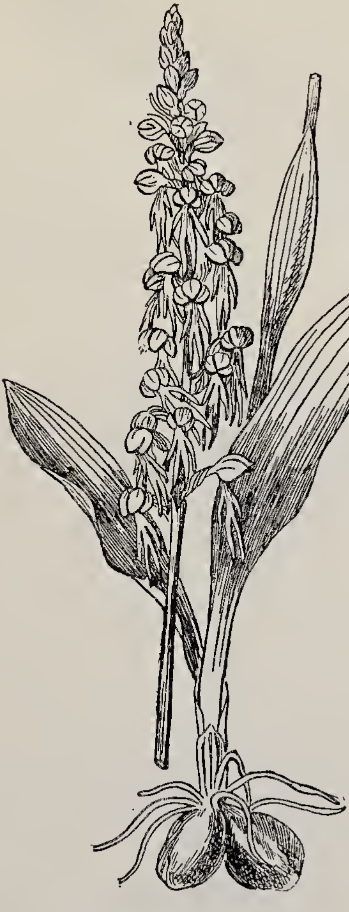
5. *O. militáris* (Military Orchis).—A closely allied but smaller species, with pale red *flowers*, with a pink *hood*, pink and white, 4-lobed *lip* with narrow, upcurved segments, and raised, rough, red points, and short *spur*.—Chalky hills in the South-east of England; rare.—Fl. May. Perennial.

6. *O. Símia* (Monkey Orchis).—A closely allied but more slender form, with dark red *hood* and the lobes of the *lip* all long, narrow, and crimson.—Chalky hills in Berkshire, Oxfordshire, and Kent; rare.—Fl. May. Perennial.

7. *O. Mório* (Green-winged Meadow Orchis).—*Stem* 6—12 in. high; *leaves* lanceolate; *flowers* few, in a loose spike, deep crimson, rarely white; blunt, lateral *sepals*, and *petals* strongly marked with parallel green veins, and bent upwards to form a *hood* over the *column*; *lip* pale, spotted with crimson; *spur* shorter than the ovary, blunt.—Meadows; frequent.—Fl. May, June. Perennial.

8. *O. máscula* (Early Purple Orchis).—*Stem* 6—12 in. high; *leaves* oblong-lanceolate, blunt, usually blotched with dull reddish-black; *flowers* few, in a loose spike, crimson, mottled with lighter and darker shades, rarely white, each rising from a twisted *ovary*, and having a long, stout, blunt *spur*; *sepals* spreading, not forming a hood.—Woods and pastures; abundant.

The colour of the flower, associated, as it often is, with Cowslips and Wild Hyacinths, is rich and beautiful;



ÁCERAS ANTHROPÓPHORA (*Man-Orchis*).

but the odour is strong and offensive, especially in the evening.—Fl. April—June. Perennial.

9. *O. laxiflóra* (Lax-flowered Orchis), with un-

spotted *leaves*, and large, bright red *flowers* in a loose spike, with long, 3—5 veined *bracts* and reflexed *sepals*, occurs only in the Channel Islands.—Fl. May, June. Perennial.

** *Tubers palmate.*

10. *O. incarnáta* (Crimson Marsh-Orchis).—*Stem* about a foot high, usually hollow; *leaves* radical and cauline, lanceolate, acute, concave at the tip, unspotted; *flowers* rose-coloured, in a dense spike; *bracts* long, 3-veined, green; *sepals* spreading; *lip* slightly 3-lobed; *spur* shorter than the ovary.—Marshes; frequent.—Fl. June. Perennial.

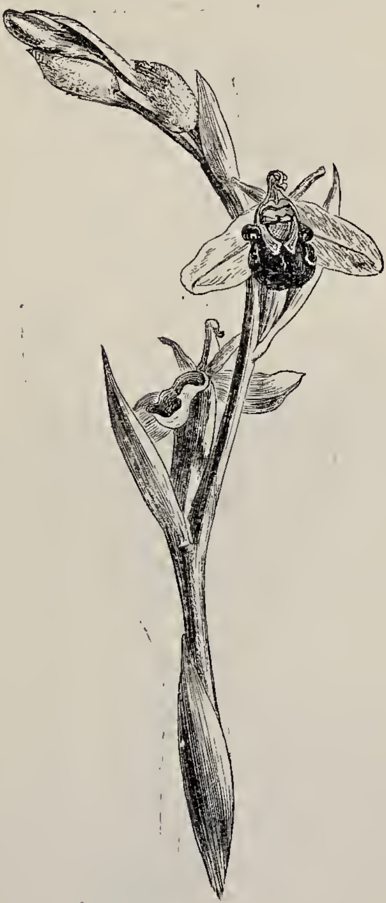
11. *O. latifólia* (Marsh-Orchis).—A closely allied and very similar species; *leaves* generally with ring-shaped spots, oblong, flat at the tip.—Marshes; less frequent.—Fl. May, June, often over before the preceding species flowers. Perennial.

12. *O. maculáta* (Spotted Orchis).—*Stem* about a foot high, solid; *leaves* oblong-lanceolate, radical, and cauline, with numerous squarish spots; *flowers* lilac or white, curiously marked with dark lines and spots, in a dense, oblong-pyramidal spike; *bracts* 3-veined, green; *lip* deeply 3-lobed.—Moist heaths and commons; abundant.—Fl. May—July. Perennial.

12. Áceras (Man-Orchis).—Leafy plants with ovoid *tubers*; sessile *flowers* with a hood; *lip* anterior, long, 4-lobed, not spurred; *pollinia* 2, with their glands in one pouch. (Name from the Greek *a*, without, *keras*, a horn.)

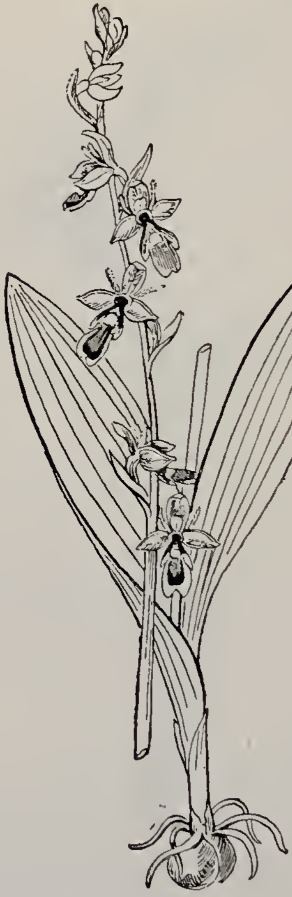
1. *A. anthropóphora* (Man-Orchis).—About a foot high, with mostly radical *leaves*; and a loose spike of curious little *flowers* with a large green hood, and a long, slender, yellow *lip* with 2 lateral and 2 terminal lobes, like arms and legs.—Dry chalky places in the East of England; rare.—Fl. June, July. Perennial.

13. Óphrys (Insect-Orchis).—Leafy plants with ovoid *tubers;* sessile *flowers;* spreading *sepals; lip* anterior, variously lobed, usually convex and velvety, not spurred; *pollinia* 2, with their glands in distinct pouches. (Name from the Greek *ophrus*, an eyebrow, from the markings on the lip.)



óphrys apífera (*Bee-Orchis*).

1. *O. apífera* (Bee-Orchis).—A curious and beautiful plant, about a foot high, with short, oblong, mostly radical *leaves* and 3—6 *flowers* in a loose spike, with large, leafy *bracts ; sepals* white or pink, spreading, ovate ; *lip* velvety, broad, brown variegated with yellow, convex, 5-lobed, the 2 lower lobes hairy, the 2



ÓPHRYS MUSCÍFERA (*Fly-Orchis*).

lateral anterior ones bent under the lip and the terminal one long, acute, and usually also reflexed; *pollinia* falling forward and pollinating the stigma of the same flower.—Open places on calcareous soil; uncommon. No one who has heard that plants exist bearing the names of this and the three following species can well doubt their identity should they fall in his way.—Fl. June, July. Perennial.

2. *O. arachnítes* (Late Spider-Orchis)—A closely similar species chiefly differing in the *lip*, which is longer, velvety, dark purple variegated with yellow, with a flat, heart-shaped, green, terminal lobe.—Chalk downs in Kent and Surrey; very rare.—Fl. April—June. Perennial.

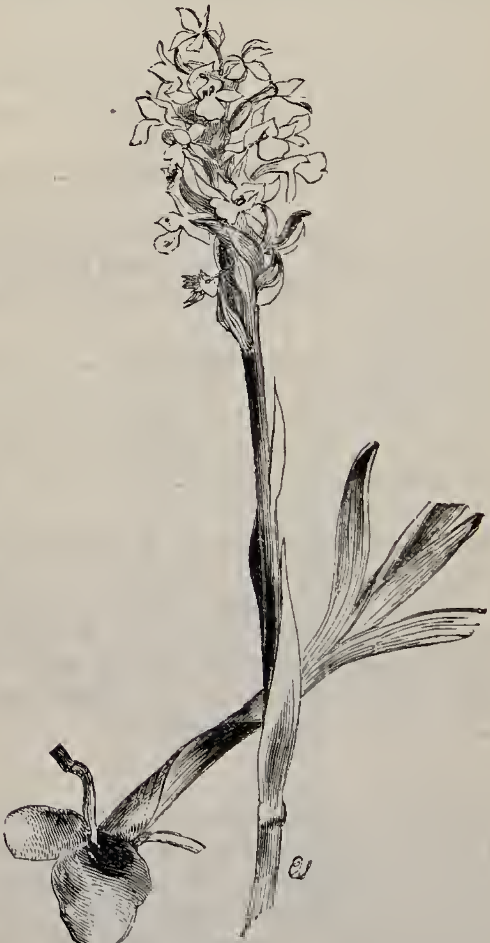
3. *O. aranífera* (Spider-Orchis).—A somewhat smaller plant with fewer *flowers;* green *sepals;* and deep brown hairy *lip* with smooth, yellowish markings and a notched apex without terminal lobe.—Chalk downs in the south-east; rare.—Fl. April, May. Perennial.

4. *O. muscífera* (Fly-Orchis).—A slender species, about a foot high, with few oblong *leaves*, *flowers* 1—12, in a loose spike; *sepals* green; *lateral petals* thread-like, resembling the antennæ of a fly; *lip* oblong, 3-lobed, brownish-purple with a bluish patch in the centre.—Shady places on calcareous soil; uncommon.—Fl. May—July. Perennial.

14. Hermínium (Musk-Orchis).—Leafy plants with ovoid *tubers;* few *leaves;* sessile *flowers; perianth-leaves* incurved, *lip* anterior, 3-lobed, pouched; *pollinia* 2, distinct, with large, naked glands. (Name from the Greek *hermin*, a bed-post, from the shape of the tubers.)

1. *H. Monórchis* (Musk-Orchis).—A diminutive plant, generally 4—6 in. high, with stalked *tubers;* slender *stem; radical leaves* 2, lanceolate, *cauline* 1;

flowers minute, green, smelling like musk at night; *sepals* ovate; *lip* narrow, 3-lobed, pouched at the base, terminal lobe longest.—Chalky downs in the south; rare.—Fl. June, July. Perennial.



HABENÁRIA CONÓPSEA (*Sweet-scented Orchis*).

15. Habenária.—Leafy plants with sessile *flowers* with a hood; *lip* anterior, spurred; *pollinia* 2, distinct; with naked glands. (Name of doubtful etymology.)

1. *H. conópsea* (Sweet-scented Orchis).—About a foot high; *tubers* palmate; *leaves* oblong-lanceolate, acute, keeled; *flower-buds* red or deep lilac; *flowers* lighter, not spotted, very fragrant, in an elongated, cylindrical spike; *bracts* 3-veined; *lip* with 3 equal, entire lobes and a slender *spur* twice as long as the ovary.—Dry upland pastures; common.—Fl. June, July. Perennial.

2. *H. intácta*, a small species with ovoid *tubers*; *stem* 4—10 in. high; *leaves* often spotted; delicate pink *flowers* with an unequally 3-lobed *lip* and short *spur*, occurs only in limestone pastures in the West of Ireland.—Fl. April—June. Perennial.

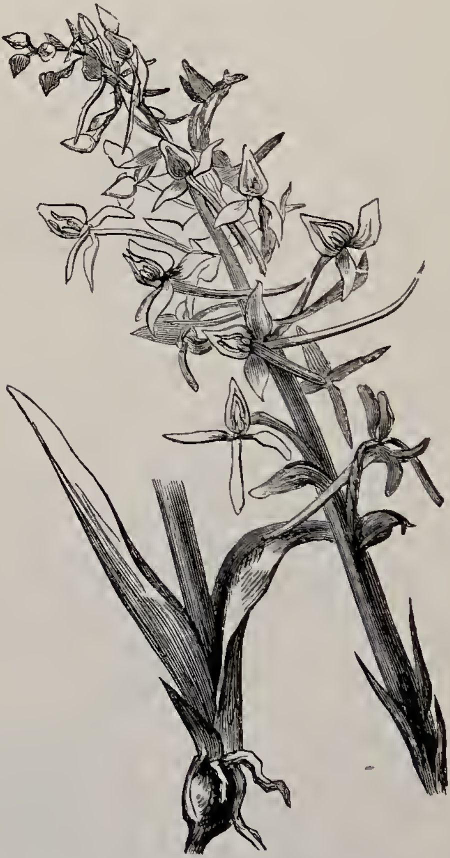
3. *H. álbida* (Small White Habenaria).—A similar but rather large species, has *roots* consisting of numerous fleshy fibres; *lower leaves* oblong, blunt, *upper* lanceolate, acute; *flowers* small, yellowish-white, fragrant; *bracts* 3-veined; *lip* with 3 unequal, acutely triangular lobes, and a *spur* shorter than the short *ovary*.—Hilly pastures, mostly in the north; uncommon.—Fl. June—August. Perennial.

4. *H. víridis* (Frog-Orchis).—*Tubers* palmate; *stem* 3—8 in. high; *leaves* oblong, blunt, smaller upwards; *flowers* green, in a loose spike; *bracts* long, green; *lip* pale brownish-green, linear, flat; *spur* very short. — Upland pastures; common. — Fl. June—August. Perennial.

5. *H. bifólia* (Lesser Butterfly-Orchis).—A singular, but not appropriately named, plant, for its flowers bear but a slight resemblance to a butterfly. It has 2 broad, glossy *leaves* at the root; the *stem* is slender and angular, about a foot high; and the *flowers* white, very fragrant in the evening; *sepals* spreading; *lip* linear, strap-shaped, entire; *spur* slender, spreading, twice as long as the ovary; *anther-*

chambers parallel.—Moist heaths and the borders of woods; common.—Fl. June, July. Perennial.

6. *H. chloroleúca* (Greater Butterfly-Orchis).—A closely allied but larger species, with larger, greener *flowers*, broader lateral *sepals*, a stouter *spur* bending downwards, and *anther-chambers* diverging at the



HABENÁRIA BIFÓLIA (*Lesser Butterfly-Orchis*).

base.—In more moist situations; almost equally common.—Fl. July, August. Perennial.

16. CYPRIPÉDIUM (Lady's Slipper), represented by only one species in Britain, *C. Calcéolus*, one of the rarest, most beautiful, and interesting of our native plants; has a creeping *rhizome;* a downy *stem*, about a foot high, bearing 3 or 4 large, ovate, acuminate, ribbed *leaves* and 1 or 2 large *flowers* with broad, spreading, reddish-brown *sepals* and *petals;* and the distinctive large inflated *lip* of a pale yellow.—Woods on limestone in the North of England; very rare.—(Name from the Greek *Kupris*, Venus, *podion*, a slipper.)—Fl. May, June. Perennial.

ORD. LXXIX. IRÍDEÆ.—IRIS FAMILY.

A considerable Order of herbaceous plants with fleshy, underground *stems;* long, narrow, often sword-shaped, and equitant *leaves;* and showy *flowers; perianth* superior, petaloid, of 6 leaves in 2 alternating whorls, imbricate, and often persistent; *stamens* 3, with extrorse anthers; *ovary* inferior, 3-chambered, many-ovuled; *style* 1; *stigmas* 3, often petal-like; *fruit* a 3-sided, 3-valved, many-seeded capsule. They are chiefly natives of warm and temperate, extra-tropical regions, and are most abundant in Cape Colony, where, at the time of its discovery by the Portuguese, the natives mainly supported themselves on the underground stems of plants of this Order, together with such shell-fish as were left on shore by the receding tide. Few species are used in the arts: Orris-root is the rhizome of *Íris florentína* and other species, which, when dried, has a perfume resembling that of Violets, and is used as an ingredient of toothpowder; and Saffron, the dried stigmas of *Crócus satívus*, formerly used far more extensively than at present, as a dye and as a colouring agent in cooking and in medicine. *Iris, Crocus, Ixia, Gladiolus*, and others are favourite garden genera.

1. Íris.—*Flowers* polysymmetric; *sepals* reflexed; *style* dividing into 3 broad, 2-fid, petaloid lobes.

*2. Crócus. — *Flowers* polysymmetric, funnel-shaped, with a long tube; *style* slender; *stigmatic lobes* widening upward.

3. Romuléa. —*Flowers* polysymmetric, with a short tube; *style* slender; *stigmas* 2-fid, lobes slender.

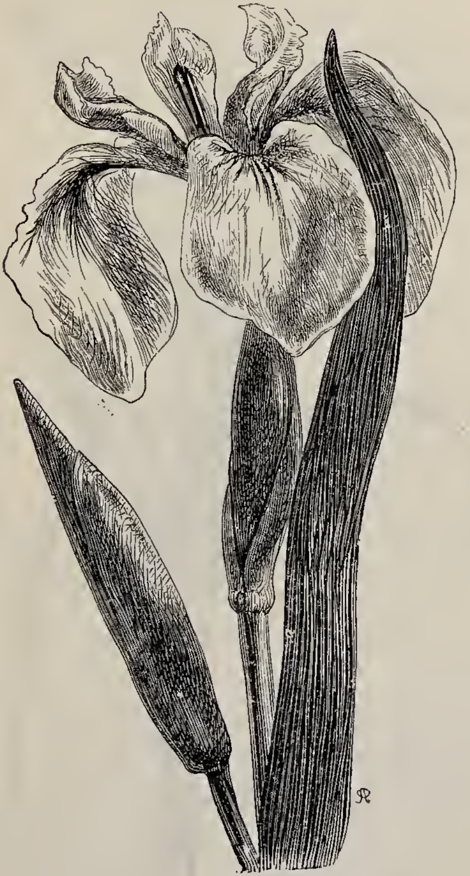
4. Sisyrínchium.—*Flowers* polysymmetric, with a short tube; *style* short; *stigmas* undivided.

5. Gládiolus. — *Flowers* monosymmetric; *style* slender; *stigmatic lobes* widening upward.

1. Íris (Flower-de-luce).—Herbaceous plants mostly with fleshy *rhizomes; leaves* chiefly radical, sword-shaped, equitant; *flowers* few, large, with a membranous spathe; *perianth-tube* short; *sepals* 3, large, petaloid, stalked, reflexed; *petals* 3, erect, stalked; *style* stout, dividing into 3 broad, spreading, petal-like lobes covering the stamens, bifid, with a transverse stigmatic line. (Name from the Greek *iris*, the rainbow, from the beautiful colouring of the flowers.)

1. *I. fœtidíssima* (Stinking Iris, Gladden, Roast-beef Plant.)—*Stem* compressed, with 1 sharp edge, about 2 feet high; *leaves* weak; *flowers* a dull leaden hue or livid purple, rarely yellow, with no fringe down the *sepals*.—Thickets, chiefly on calcareous soil; not uncommon. The leaves are so acrid as to leave a burning taste in the mouth, or even to loosen the teeth. The whole plant, when bruised, emits a disagreeable odour. The bright scarlet seeds remain attached to the plant all through the winter.—Fl. May—August. Perennial.

2. *I. Pseudácorus* (Corn Flag, Yellow Iris).—A stout, aquatic plant with creeping, acrid *rhizomes;* round *stem,* 2—5 feet high; sword-shaped *leaves;* and large, handsome yellow *flowers* with unfringed *sepals.* —Marshes and river-banks; common. The rhizome yields a black dye, and the seeds, it is said, may be



ÍRIS PSEUDÁCORUS (*Yellow Iris, Flag, Corn Flag*).

roasted and used as a substitute for coffee.—Fl. May—August. Perennial.

3.* *I. tuberósa*, with tubers, 4-angled *leaves*, and solitary, purple *flowers*, found at Penzance and at Cork, is one of several cultivated species occasionally found apparently wild.

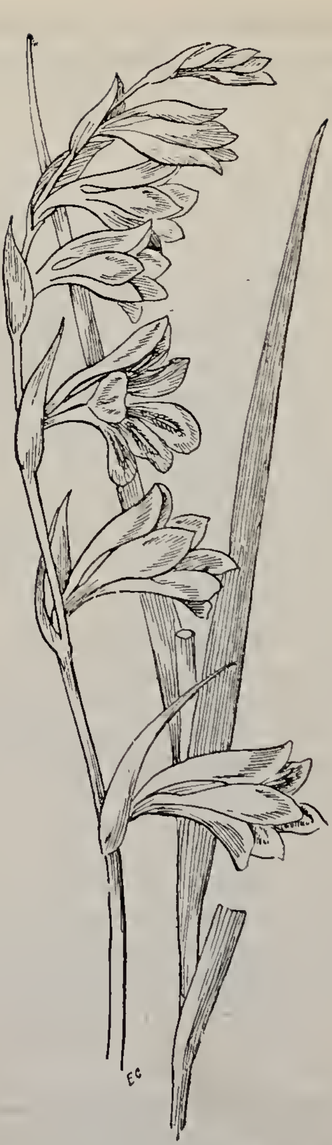
CRÓCUS SATÍVUS (*Saffron Crocus*).

*2. Crócus.—Herbaceous plants with fleshy *corms;* no aërial stem; linear, radical *leaves,* white beneath, with revolute edges; and generally solitary, large, funnel-shaped *flowers* with a long *perianth-tube; style* slender; *stigmatic lobes* 3, widening upwards; *capsule* pedicellate. (Name from the Greek *krokos,* saffron, and that from *krókê,* a thread.) Several species are naturalised in various parts of England, such as *C. vérnus,* the Purple Spring Crocus, in meadows at Nottingham and elsewhere, flowering in March and April; but the only species with any claim to be considered indigenous is *C. nudiflórus* (Naked-flowered Crocus), with *leaves* appearing in March, and solitary, purple *flowers* in September and October, occurring in meadows in the Midland counties. This genus must not be confused with the *Colchicums,* which are misleadingly called Autumn Crocuses or Meadow Saffrons, but belong to the Liliaceæ, having 6 stamens.

3. Romuléa.—A closely allied genus with a *corm;* short *scape;* linear, radical *leaves;* polysymmetric *perianth* with a short tube surrounded by a longer spathe; *perianth-leaves* 6, recurved at the tip; *stigmas* 3, 2-fid, with linear segments. (Name from *Romulus,* founder of Rome.

1. *R. Colúmnæ,* the only British species, a small plant, 3—4 in. high, with a minute *corm,* very narrow *leaves,* and 1—3 *flowers* on a short stalk, greenish outside, whitish, with purple veins and yellow at the base, inside.—It grows only on a sandy pasture called the Warren, at Dawlish, Devon, and in the Channel Islands.—Fl. March—May. Perennial.

4. Sisyrínchium (Blue-eyed Grass).—Fibrous rooted plants with linear, equitant, radical *leaves;* tall, umbellate *scape;* polysymmetric *perianth* with short



GLÁDIOLUS ILLÝRICUS.

tube; short *style,* and 3 undivided thread-like *stigmas.* (Name of uncertain etymology.)

1. *S. angustifólium* (Narrow-leaved Blue-eyed Grass).—A pretty plant, about a foot high, with linear *leaves* and a 2-edged, winged *peduncle* bearing 1—6 blue *flowers,* with a short *spathe* and pointed *perianth-leaves.*—Bogs, Galway and Kerry.—Fl. July, August. Perennial.

2. *S. califórnicum,* a species with 4—5 yellow *flowers,* with blunt *perianth-leaves,* a native of California and Oregon, was found in June, 1896, by Rev. E. S. Marshall, in marshy ground at Rosslare, co. Wexford.

5. Gládiolus.—Herbaceous plants with *corms;* *leaves* sword-shaped, equitant; *flowers* in a tall, 1-sided spike, monosymmetric, with a short, curved *perianth-tube,* and 6 segments, slightly 2-lipped; *style* slender; *stigmatic lobes* 3, widening upwards. (Name a Latin diminutive from *gládius,* a sword, referring to the form of the leaves, pronounced with the accent on the first syllable, the *i* having a sound like *y.*)

1. *G. illýricus,* the only British species. *Corm* ovate, small, with many bulbils and a sheath of slender, parallel fibres; *stem* 1—2 feet high, leafy; *leaves* slender, glaucous; *flowers* crimson, 4—8 in a spike; *seeds* narrowly winged.—In the New Forest and the Isle of Wight; rare.—Fl. June, July. Perennial.

Ord. LXXX. Amaryllídeæ.—Amarýllis Family.

An extensive Order, principally composed of herbaceous plants with bulbous *stems,* sword-shaped, radical *leaves,* and showy *flowers,* which are distinguished from the Liliaceæ by their inferior *ovary,* that organ in the

Lily Family being superior. The *perianth* consists of 6 leaves in 2 whorls, sometimes with a tubular *coronet* at the mouth of its tube; *stamens* 6, with versatile, introrse anthers; *ovary* inferior, 3-chambered; *style* 1; *stigma* generally 3-lobed; *fruit* a many-seeded capsule, or rarely a 1—3-seeded berry. Large and beautiful species belonging to this Order are found in abundance in Brazil, the East and West Indies, and especially Cape Colony. In the temperate regions they are less common, and by no means so showy. Numerous species are cultivated in our gardens and conservatories, though few, if any, are indigenous to Great Britain. The bulbs of many species are poisonous, some, it is said, to such a degree that deleterious properties are communicated to weapons dipped in their juice. Those of the Snowdrop (*Galánthus nivális*) and Daffodil (*Narcíssus Pseúdo-narcíssus*) are emetic, and the flowers of the latter species are a dangerous poison. From the juice of the so-called American Aloe or Century plant (*Agávé americána*) "pulqué," a fermented liquor which is a common beverage in Mexico, is prepared. This plant, called by the Mexicans "Maguey," is cultivated over an area of 50,000 square miles, the annual consumption of pulqué in the city of Mexico alone amounting to the enormous quantity of eleven million gallons, so that the Government derive a considerable revenue from its sale. The plant attains maturity in a period varying from eight to fourteen years, when it forms flowers; and it is only just before flowering that the juice can be extracted. The central stem with the flower-bud is then cut off near the bottom and the fleshy leaves are drawn over the cavity thus left, and tied. Into this reservoir the juice distils, which otherwise would have risen to nourish the flowers. It is removed three or four times during the twenty-four hours, yielding from one to six quarts of liquor. The juice is then placed in earthen jars, and a little old pulqué is added, when it soon ferments and is immediately ready for use. When fresh, pulqué is brisk and sparkling, and in time even Europeans prefer it to any other liquor; but when old it has an unpleasant odour, which has been compared to that of putrid meat. The Agave grows but slowly in England, and is so long before flowering as to have acquired the name Century plant. When it does flower it sends up a stem some 10—30 feet high from the centre of its *chevaux de frise* of spiked leaves, branched above and bearing some thousands of greenish flowers in a corymbose manner. These flowers secrete so much honey as to drip to the ground and moisten it, whilst the physiological effort is so great that the plant usually dies after once flowering. The leaves of this species yield a fibre known as Pita or Mexican Grass, valuable for cordage and paper-making; *Agávé vivípara* yields Silk Grass; and *A. sisalána*, a native of Yucatan, now grown also in Jamaica, Ixtle Grass or Sisal Hemp.

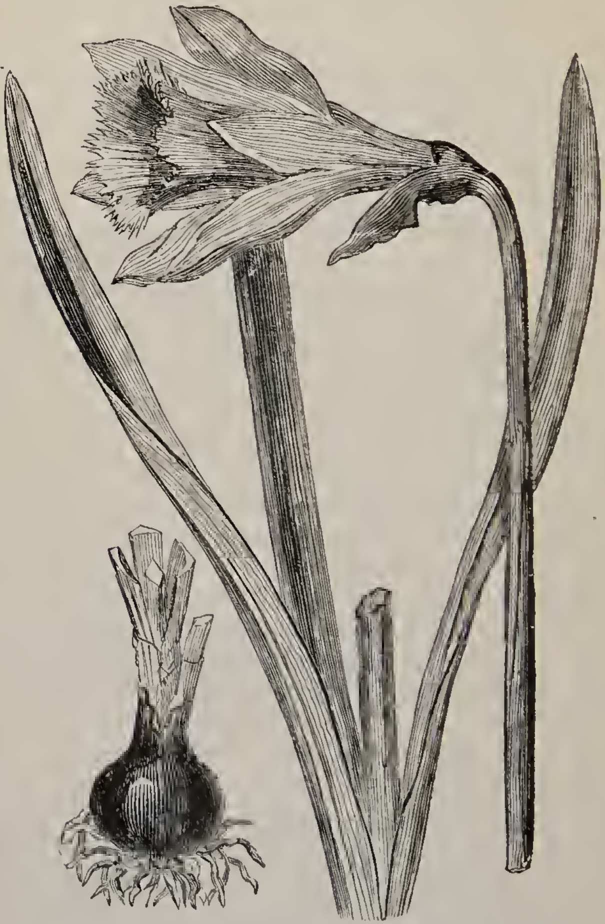
1. NARCÍSSUS.—*Perianth* with 6 nearly equal *segments* united in a *tube* below with a bell-shaped *coronet* within.

2. GALÁNTHUS. — *Perianth-segments* 6, free, the outer larger, the inner notched; no *coronet.*

3. LEUCÓJUM.—*Perianth-segments* 6, free, equal, thickened at the point; no *coronet.*

1. NARCÍSSUS (Daffodil).—Bulbous plants with linear, radical *leaves;* a 2-edged *peduncle;* a membranous *spathe; flowers* large, solitary or umbellate, yellow or white, generally drooping, polysymmetric; *perianth* with 6 nearly equal petaloid segments in 2 whorls, united into a tube below, the mouth of which terminates in a bell-shaped *coronet* differing in colour from the perianth; *stamens* 6, alternately shorter, with versatile anthers. (Named after *Narcissus*, a youth said in Greek mythology to have been changed into a flower.)

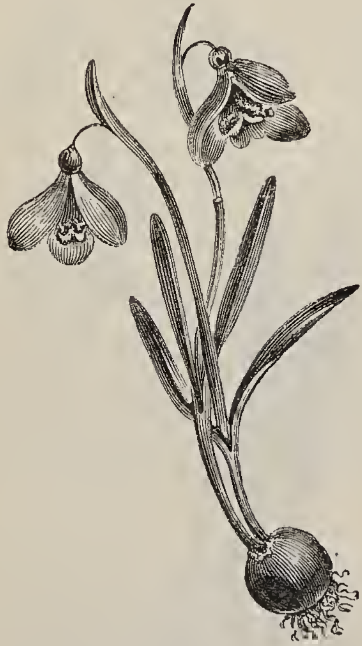
1. *N. Pseúdo-narcíssus* (Common Daffodil, Lent Lily).—A beautiful and favourite flower, with glaucous, blunt, nearly flat *leaves;* a hollow, glaucous *peduncle* less than a foot high, bearing one *flower*, the long, bell-shaped, deep golden *coronet* of which is nearly



NARCÍSSUS PSEÚDO-NARCÍSSUS (*Common Daffodil, Lent Lily*).

as long as the pale yellow *perianth-leaves*, and is notched and curled at its margin.—Woods and pastures; frequent.—Fl. March, April. Perennial.

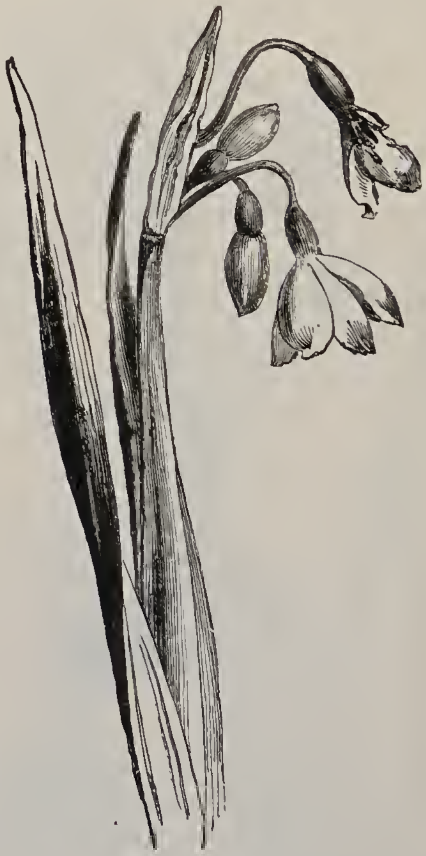
* Several other species of *Narcíssus*, such as *N. biflórus*, with a 2-flowered scape, and *N. poëticus*, the Pheasant's-eye Daffodil, with a spreading, white perianth, and small, yellow, cup-shaped, red-edged coronet, are occasionally found near houses, but are invariably the outcasts of gardens.



GALÁNTHUS NIVÁLIS (*Snowdrop*).

2. GALÁNTHUS (Snowdrop).—Bulbous plants with 2 radical, linear *leaves ;* flattened *peduncle ;* membranous *spathe ;* solitary, drooping, white *flower ; perianth*

of 6 free segments, the outer larger and more spreading, the inner erect, notched, greenish; no *coronet.* (Name from the Greek *gala,* milk, *anthos,* a flower.)



LEUCÓJUM ÆSTÍVUM (*Summer Snowflake*).

1. *G. nivális* (Snowdrop).—Too well known to need description. The *bulb* is ovoid and ½ in. across; the *leaves* glaucous, keeled, blunt; the *peduncle* longer; the *spathe* colourless, transparent, with 2 green veins,

2-fid; the *pedicel* slender; the *sepals* obovate, concave, and more spreading in the wild form than in cultivated ones.—Woods in the west; doubtfully indigenous.—Fl. January—March. Perennial.

3. LEUCÓJUM (Snowflake).—A closely allied genus, with more than 2 *leaves*; 2 *spathes*; 1—6 *flowers*; and nearly equal *perianth-leaves* all thickened at their tips; *stamens* 6, equal. (Name from the Greek *leukos*, white, *ion*, a violet.)

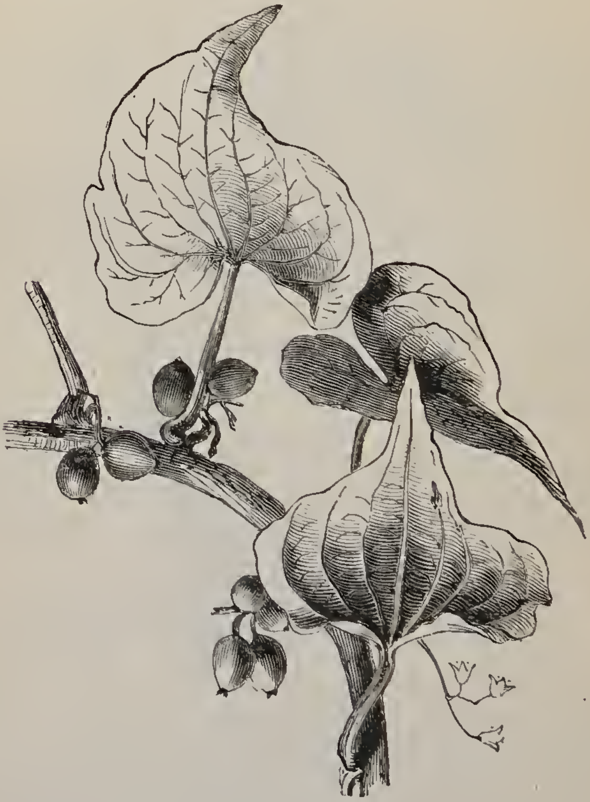
1. *L. æstívum* (Summer Snowflake).—A bulbous plant, about 2 feet high, producing its linear, blunt, glaucous, keeled *leaves*, which are about a foot long, in winter, and its 2-edged *flower-stalk*, which is rather longer and bears 2—6 rather large white *flowers*, in summer.—Wet meadows in the South-east of England; a doubtful native, common in gardens.—Fl. May. Perennial.

2. *L. vérnum* (Spring Snowflake).—A much smaller plant, producing its *leaves* and *flowers*, of which it only bears 1, or 2 together, in early spring.—Woods in Dorsetshire.—Fl. February—April. Perennial.

ORD. LXXXI. DIOSCÓREÆ.—YAM FAMILY.

A small Order of twining herbs or shrubs, which, with the exception of the Black Bryony (*Támus commúnis*), our one British species, are confined to tropical regions. They often have large *tubers*; their *stems* twine upwards in the direction of the hands of a clock; the *leaves* somewhat resemble those of Dicotyledons, being distinctly stalked and net-veined; the *flowers* are small, inconspicuous, and diœcious, in axillary clusters; the *perianth* green, superior, of 6 equal segments in 2 whorls, persistent; *stamens* 6, with introrse anthers; *ovary* inferior, 3-chambered;

style deeply 3-cleft ; *fruit* a dry, flat capsule, or, in *Támus*, a berry. *Dioscórea,* the genus from which the Order takes its name, has large tubers, which, under the name of Yams, form as important an article of



TÁMUS COMMÚNIS (*Black Bryony*).

food in tropical countries as the Potato in temperate climates. When growing they require support, like Hops. There are several species, *D. satíva* and *D. aláta*, natives of India, and *D. Batátas*, native of China. Their tubers sometimes weigh 30 or 40 lb., and the Chinese species yields enormous crops in France and Algeria, and is hardy in this country, but is not appreciated.

1. TÁMUS (Black Bryony).—*Perianth* bell-shaped; *stigmas* 2-lobed; *berry* few-seeded. (Name, the Classical Latin name of the plant.)

1. *T. commúnis* (Black Bryony).—The only British species, a handsome plant with a large, black *tuber;* a slender, green *stem*, twining among bushes to the length of many feet, and bearing numerous very glossy, cordate, acuminate *leaves*, which in autumn turn to a purple bronze or to a bright lemon-yellow, and clusters of small, green *flowers*, which are succeeded by oblong scarlet *berries*. The plant at that season is very attractive; but the stem dies down to the ground in winter.—Hedgerows in England; common.—Fl. May, June. Perennial.

SERIES II. HYPÓGYNÆ.

Ovary superior.

ORD. LXXXII. LILIÁCEÆ.—LILY FAMILY.

An extensive family of plants comprising about 2,500 species, of which the majority are bulbous herbaceous plants with showy flowers. Some attain the dimensions of shrubs, or even trees, in which case they resemble the Palms in having no true separable *bark* or distinctly marked *pith*, and in the *leaves* being never jointed to the stem. The leaves of Herb-Paris (*Páris quadrifólia*), a British species, are net-veined, and so resemble those of Dicotyledons; but are not jointed to the stem. The *perianth* consists of 6—10 leaves, generally similar and petaloid, but in 2 whorls, distinct, or united into a tube; *stamens* 6—10, epiphyllous, with anthers generally introrse; *ovary*, superior, 3- rarely 4-chambered; *style* 1; *stigma* simple, or 3-lobed; *fruit* a 3-chambered, many-seeded capsule, or berry-like, 3—5-chambered, 1—6-seeded. The Order is most abundantly represented in temperate climates, but its members attain their greatest size in the tropics. The Butcher's Broom (*Rúscus aculeátus*) is the only British species which forms a woody stem. The Dragon's Blood (*Dracǽna Dráco*), which grows very slowly and only branches when of considerable age, was represented at Orotava, in Teneriffe, by a giant specimen 70 feet high and over 48 feet in circumference, which is recorded to have been an ancient tree and apparently almost as large in 1406; but it was destroyed by a hurricane in 1867. The leaves of many species in the Order contain tough fibre, the New Zealand Flax (*Phórmium ténax*) being the most important of these. The Onion (*Állium Cépa*), the Leek (*A. Pórrum*), and the Garlic (*A. satívum*) are among the most anciently cultivated of vegetables, and were given divine honours by the ancient Egyptians; whilst the young shoots of Asparagus are among the most esteemed delicacies of our modern kitchens. In medicine many members of the Order are of great value, among which aloes, the bitter, condensed juice of *Alóë vulgáris*, *A. succotrína*, and other species; squills, an extract of the Mediterranean *Urgínea Scílla*; and the corms and seeds of *Cólchicum autumnálé*, used as a specific for gout, are well known. As ornamental plants the beauty of this Order has for ages been proverbial, many species of *Lílium*, *Fritillária*, *Scílla*, and other genera, the Lily of the Valley (*Convallária majális*), the Hyacinth (*Hyacínthus orientális*), and the Tulip (*Túlipa*) being among the most prized of our garden flowers.

Section I. ASPARÁGEÆ.—*The Asparagus Group.*

Never bulbous ; fruit berry-like.

1. RÚSCUS.—*Stem* woody, with flattened, leaf-like *branches*, minute, scale-like *leaves*, diœcious *flowers* and united *filaments*.

2. ASPÁRAGUS.—*Stem* succulent, branched ; ultimate branches bristle-like ; *stamens* not united.

3. POLYGONÁTUM. — *Stem* leafy ; *flowers* axillary ; *perianth* tubular, 6-cleft.

4. MAIÁNTHEMUM. — *Stem* erect, with few *leaves ; flowers* in a terminal raceme, generally 4-merous.

5. CONVALLÁRIA.—*Leaves* 2—3, radical ; *flowers* in a terminal raceme, bell-shaped, 6-merous.

Section II. ASPHODÉLEÆ.—*The Asphodel Group.*

Generally bulbous ; leaves radical ; scape leafless ; fruit a capsule.

6. SIMÉTHIS. — Not bulbous ; *leaves* grass-like ; *flowers* in a panicle, 6-merous.

7. ÁLLIUM.—*Flowers* in an umbel, with a 1—2-leaved membranous *spathe.*

8. MUSCÁRI. — *Flowers* in a bracteate raceme ; *perianth* globular.

9. SCÍLLA.—*Flowers* in a bracteate raceme ; *perianth* blue, purple, or white, deciduous.

10. ORNITHÓGALUM.—*Flowers* in a bracteate, sometimes corymbose raceme ; *perianth* white, persistent, of 6 free, spreading segments.

Section III. TULÍPEÆ.—*The Tulip Group.*

Bulbous; leaves radical and cauline; fruit a capsule.

*11. LÍLIUM.—*Flowers* few, large ; *perianth-leaves* 6, free, spreading, or reflexed, deciduous.

12. FRITILLÁRIA. — *Flowers* few, large, drooping ;

perianth-leaves 6, free, not reflexed, with a nectary at the base of each, deciduous.

13. Túlipa.—*Flower* solitary, large, erect; *perianth-leaves* 6, free, without nectaries, deciduous.

14. Gágea.—*Flowers* few, small, yellow, umbellate; *perianth-leaves* 6, free, without nectaries, spreading, persistent.

15. Llóydia.—*Flowers* few, small, white; *perianth-leaves* 6, free, with transverse nectaries, spreading, persistent.

Section IV. Melantháceæ.—*Colchicum Tribe.*

Not bulbous; leaves mostly radical; fruit mostly capsular.

16. Cólchicum.—*Stem* a corm; *perianth* with a very long tube.

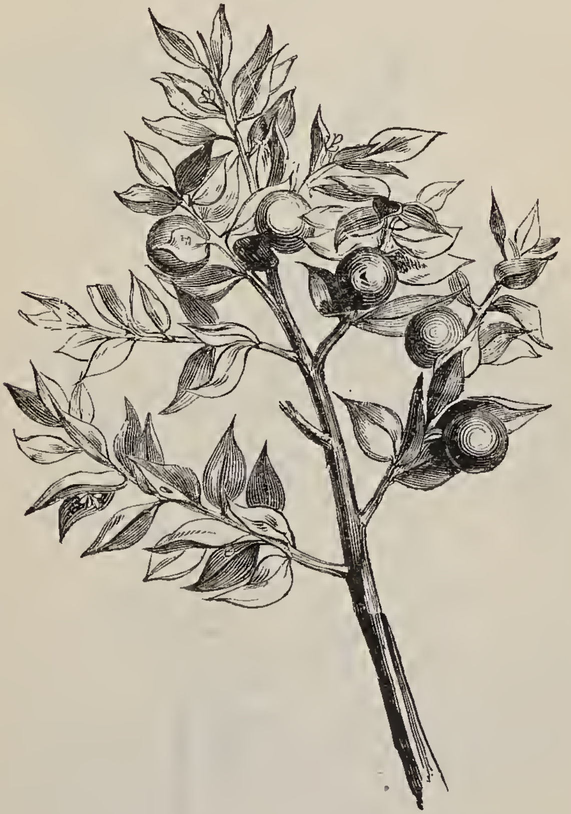
17. Narthécium.—*Stem* prostrate, creeping; *flowers* in a raceme; *perianth* of 6 free, spreading leaves, golden-yellow, persistent; *style* 1; *capsule* 3-chambered.

18. Tofiéldia.—*Stem* a short rhizome; *flowers* in a raceme, small, greenish-yellow; *perianth-leaves* 6, free, spreading, persistent; *styles* 3; fruit of 3 follicles.

19. Páris.—*Rhizome* stout; *stem* erect, simple, bearing 4 whorled *leaves*; *flower* solitary, terminal, green, generally 4-merous; *fruit* berry-like.

1. Rúscus (Butcher's Broom).—Shrubs with stout, creeping *rhizomes;* woody, branched *stems* bearing flattened, leaf-like, evergreen *branches* or "cladodes" in the axils of minute, scale-like, deciduous *leaves; flowers* diœcious; *perianth* deeply 6-cleft, green, persistent; *filaments* united into a tube; *fruit* berry-like, 1-chambered, 1—2-seeded. (Name said to be from *bruscus*, a word of Keltic origin.)

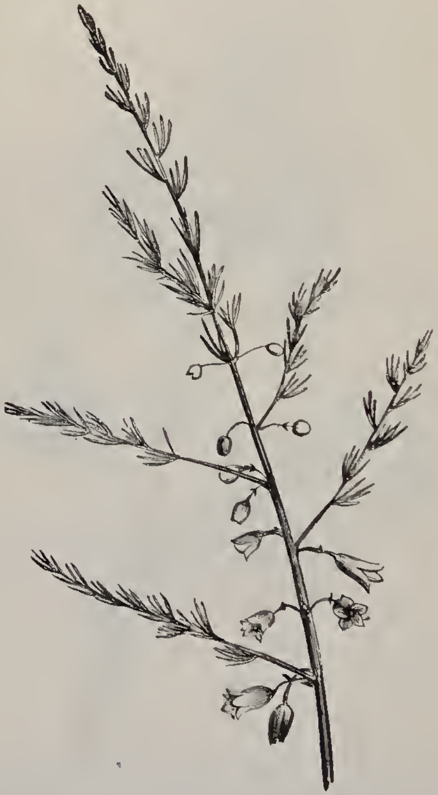
1. *R. aculeátus* (Butcher's Broom, Knee-Holly).—The only British species, and only British shrubby Monocotyledon, 3—4 feet high, with erect, dark green *stems;* ovate, dark green, flattened *branches*, each terminating in a sharp spine; *flowers* minute, green, growing singly from the centres of the flattened branches; *berries* as large as marbles, round, scarlet.—



RÚSCUS ACULEÁTUS (*Butcher's Broom, Knee-Holly*).

Woods in the south; uncommon.—Fl. February—May. Perennial.

2. Aspáragus.—Herbaceous plants with a stout rhizome; branched *stem* bearing tufts of green, bristle-like *branches* in the axils of minute scale-like *leaves; flowers* small, pendulous, often diœcious; *perianth* deeply 6-cleft, bell-shaped; *stamens* 6, distinct; *stigmas*



ASPÁRAGUS OFFICINÁLIS (*Common Asparagus*).

3; *fruit* berry-like, 3-chambered, 3—6-seeded. (Name, the Greek name of the plant.)

1. *A. officinális* (Common Asparagus).—The only British species, differing chiefly in size from the cultivated plant, has its *stem* prostrate at its base, giving off ascending branches about a foot long, slender, and flexuous; *flowers* 1—2 together, yellowish-white; *berry* scarlet.—On the sea-coast in the south-west, especially near the Lizard; rare.—Fl. July, August. Perennial.

POLYGONÁTUM MULTIFLÓRUM (*Common Solomon's Seal*).

3. POLYGONÁTUM (Solomon's Seal).—Herbaceous plants with a fleshy *rhizome;* leafy *stem;* axillary *flowers;* tubular, 6-cleft *perianth; stamens* 6, free, included; *fruit* berry-like. (Name from the Greek *polús*, many, *gonu*, the knee, from the zigzag rhizome.)

1. *P. verticillátum* (Narrow-leaved Solomon's Seal).—*Stem* erect, 2—3 feet high, angular; *leaves* sessile, linear-lanceolate, in whorls of 3—6: *flowers* greenish; *berries* red.—Woods in the north; very rare.—Fl. June, July. Perennial.

2. *P. multiflórum* (Common Solomon's Seal).—A striking plant, 1—2 feet high, with a round, drooping *stem*, bearing numerous, scattered, oblong, acute *leaves*, which hang downwards; greenish-white *flowers* in 2—5-flowered axillary clusters, resembling old-fashioned bunches of seals; *filaments* hairy, and blue-black *berries.*—Woods; uncommon.—Fl. May, June. Perennial.

3. *P. officinálé* (Angular Solomon's Seal).—Differing from the preceding in being smaller, having an angular *stem;* thicker *leaves;* larger, usually solitary *flowers;* and smooth *filaments.*—Woods; rare.—Fl. May, June. - Perennial.

4. MAIÁNTHEMUM (May-Lily), of which the only species is *M. Convallária* (Two-leaved May-Lily), a graceful little plant with a creeping, slender *rhizome;* an erect *stem*, 4—8 in. high, bearing 2, scattered, stalked, cordate, acute *leaves*, and a terminal raceme of small, white, fragrant, 4-merous *flowers*, followed by spotted *berries.*—Woods near Scarborough, and elsewhere; very rare, though common in the North of Europe. (Name from the Greek *maios*, May, *anthemos*, a flower.)—Fl. May, June. Perennial.

5. CONVALLÁRIA (Lily of the Valley), represented

by the one species *C. majális*, a beautiful plant with a creeping *rhizome; leaves* 2—3, radical, ovate-lanceolate, with a sheathing petiole; *flowers* 6—12, globular, pure white, in a terminal, drooping, loose, 1-sided raceme, with an angular peduncle; *berries* red.—Woods on a light soil; not common. An universal favourite in gardens for the beauty and fragrance of its blossoms. (Name from the Latin *convallis*, a valley.)—Fl. May, June. Perennial.

6. SIMÉTHIS, a genus represented by the one species *S. bícolor* (Variegated Simethis), a slender plant with fibrous *roots;* radical, grass-like, recurved *leaves*, 6—18 in. long, and a forked, corymbose cyme, about the same height, of rather large, 6-merous *flowers*, purple outside, white inside; *fruit* a 3-chambered, 6-seeded capsule.—Formerly in fir-woods near Bournemouth and in Kerry, very rare.—Fl. May, June.. Perennial.

7. ÁLLIUM (Garlic).—Bulbous, strong-smelling plants, with radical *leaves* and *flowers* in an umbel or head, with a membranous, 1—2-leaved spathe and a leafless peduncle; *perianth* of 6 free, spreading segments; *fruit* a 3-chambered, 3—6-seeded capsule. (Name, the Classical Latin name of some species of the genus.)

1.* *A. Ampelóprasum* (Wild Leek).—The largest species, 3—4 feet high, with a large *bulb* with large, stalked, lateral "cloves" or bulbils; a stout, leafy *stem;* distichous, flat, linear, folded, glaucous *leaves* with cylindrical sheaths; a globose umbel of greenish-white *flowers* in a long pointed spathe, often with bulbils; the 3 outer *filaments* broader, 3-fid.—Rocky places; rare, merely naturalised.—Fl. July, August. Perennial.

2. *A. Scorodóprasum* (Sand Leek).—A smaller

plant, 2—3 feet high, with a slender, leafy *stem;* flat, linear, keeled, glaucous *leaves* with 2-edged sheaths ; a loose head of red *flowers* in 2 short, pointed spathes, with red bulbils.—Sandy woods and fields in the north ; rare.—Fl. May—July. Perennial.

3. *A. sphærocéphalum* (Small Round-headed Garlic).—A similar but smaller species, with hollow *leaves;* round, compact umbels of red *flowers* without bulbils.—Bristol and Jersey; very rare.—Fl. June—August. Perennial.

4. *A. vineálé* (Crow Garlic).—A similar plant with hollow, smooth *leaves* round in section ; and dense, globose heads of red *flowers* with greenish or red bulbils.—Waste ground; common.—Fl. June, July. Perennial.

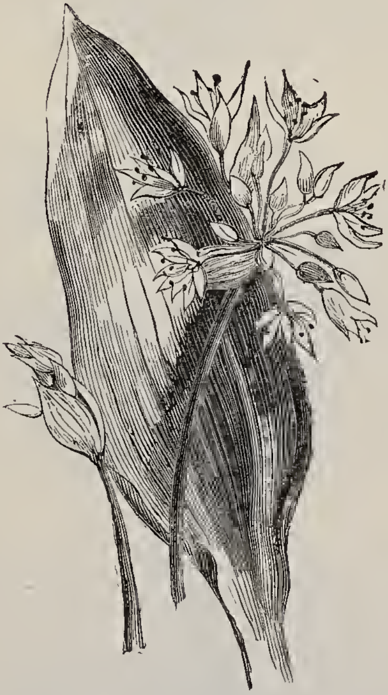
5. *A. oleráceum* (Field Garlic).—About a foot high, with fleshy, solid *leaves,* semicircular in section, grooved above and ribbed beneath ; and a loose head of pale greenish or brownish-pink *flowers* in 2 spathes of unequal length, with bulbils ; *stamens* not 3-fid.—Borders of field ; uncommon.—Fl. July, August. Perennial.

6.* *A. carinátum* (Keeled Garlic).—A very similar species with linear, channelled *leaves* flat towards their tips, and rose-pink *flowers* with *stamens* twice as long as the perianth.—Naturalised in a few places.—Fl. August. Perennial.

7. *A. Schœnóprasum* (Chives).—A pretty plant with a few straight, hollow *leaves* round in section ; and dense, globular, many-flowered umbels of pink *flowers,* with 2 short spathes, no bulbils, and included, undivided *stamens.*—Rocky pastures ; very rare.—Fl. June, July. Perennial.

8. *A. sibíricum* (Greater Chives), differing chiefly in its larger size, sometimes 2 feet high, and *leaves* curving outwards and roughly ribbed, occurs on rocks, near the sea, in Cornwall.—Fl. June, July. Perennial.

9. *A. triquétrum* (Triangular-stalked Garlic).—About a foot high, with a leafless, acutely triangular *scape;* radical, flat, linear, keeled *leaves; flowers* drooping to one side, in a loose umbel, with 2 short spathes and no bulbils; *perianth-leaves* white with a green midrib; *stamens* undivided, included.—Hedges and meadows, Cornwall and Guernsey; very rare.—Fl. April—June. Perennial.



ALLIUM URSÍNUM (*Broad-leaved Garlic, Ramsons*).

10.* *A. paradóxum*, with a *scape* leafy at its base, channelled, involute *leaves*, and a bell-shaped *perianth*, recorded from Linlithgow, is not indigenous.

11. *A. ursínum* (Ramsons, Broad-leaved Garlic).—The only common species of the genus, with broad, flat, radical *leaves* scarcely distinguishable from those of the Lily of the Valley; a triangular *scape* bearing a flat umbel of pretty white *flowers* with 2 ovate, acuminate spathes, no bulbils, and undivided, included *stamens*.—Woods and thickets; common. When bruised the whole plant emits an intolerable stench of Garlic.—Fl. May, June. Perennial.

8. Muscári (Grape Hyacinth).—Bulbous plants with radical *leaves* and globular, 6-merous *flowers* in a stalked, bracteate raceme; *stamens* included; *fruit* a 3-chambered capsule. (Name from the musk-like scent.)

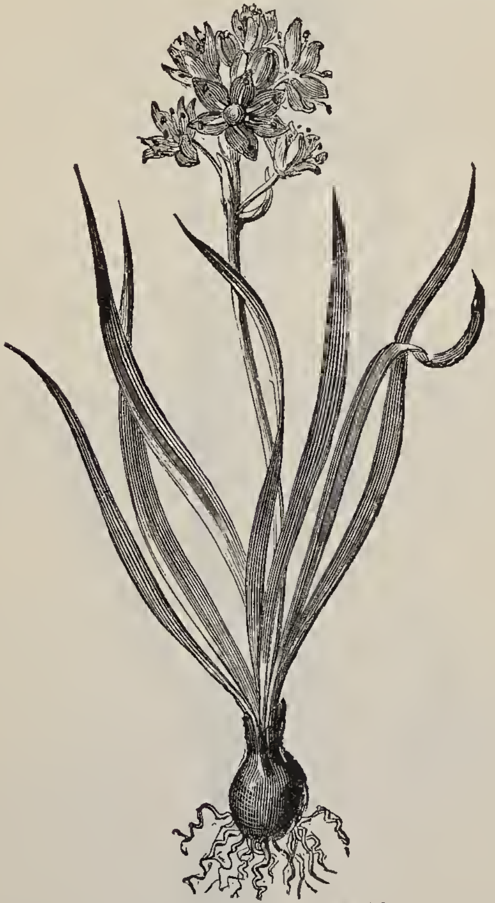
1. *M. racemósum* (Grape, or Starch, Hyacinth).—*Leaves* slender, prostrate, semicylindric, 6—12 in. long; *scape* shorter, bearing a short, cylindric, many-flowered, dense raceme of small, dark blue, ovoid *flowers* with minute *bracts*, the stalks lengthening after flowering.—Sandy fields in the eastern counties; rare.—Fl. April, May. Perennial.

9. Scílla (Squill).—Herbaceous plants with tunicate *bulbs*; radical, linear *leaves*; *flowers* 6-merous, in a raceme; *perianth* blue, purple, or white, deciduous; *fruit* a 3-chambered, many-seeded capsule. (Name, the Classical Latin name of the group.)

1. *S. autumnális* (Autumnal Squill).—A little plant with a bulb the size of a walnut; *leaves* 3—6 in. long, appearing in autumn after the shortly racemose, reddish-purple *flowers*; *bracts* absent; *perianth-segments* free, spreading; *anthers* purple.—Dry pastures, especially near the sea, in the south; rare.—Fl. July—October. Perennial.

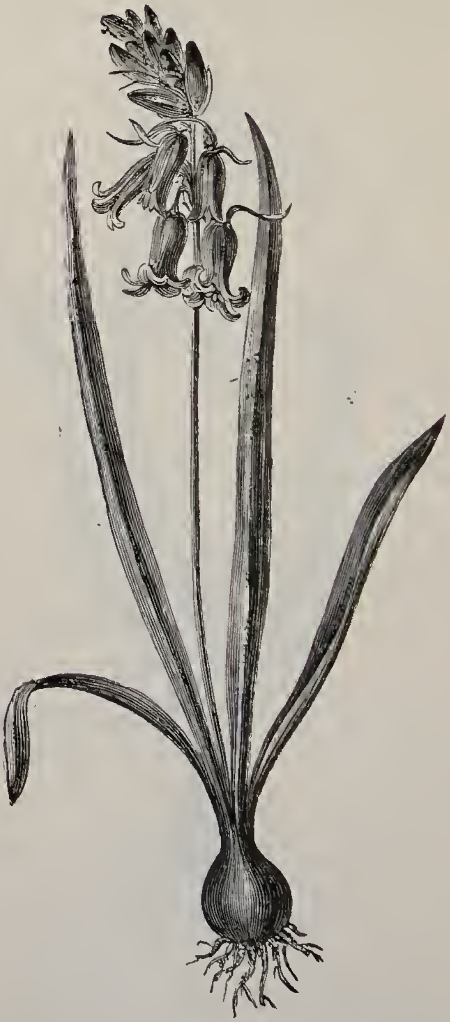
2. *S. vérna* (Vernal Squill).—A lovely little

plant, about the same size as the last; with *leaves* broader and produced in spring before the corymbose clusters of fragrant, blue, star-like *flowers*, which



SCÍLLA VÉRNA (*Vernal Squill*).

have lanceolate *bracts.*—Sea-coast in the west and north; uncommon. The turfy slopes of the sea-coast of Cornwall are in many places as thickly studded with these pretty flowers as inland meadows are with Daisies. In a few weeks after their flowering no part of the plant is visible but the dry cap-



SCÍLLA FESTÁLIS (*Wild Hyacinth*).

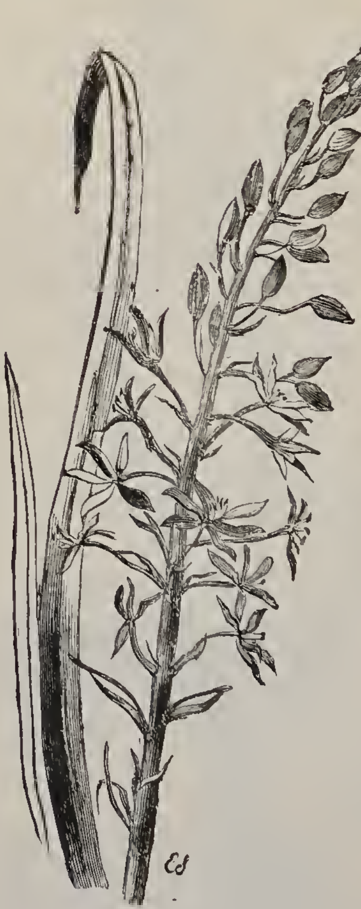
sules containing black, shining seeds.—Fl. April, May. Perennial.

3. *S. festális* (Wild Hyacinth, Bluebell). —Too well-known a favourite to need much description.—Leaves 10—18 in. long, sub-acute, produced in spring, before the stout, drooping, stalked, bracteate raceme of 6—12 blue, rarely pink or white, pendulous *flowers*, which have a bell-shaped *perianth* of united segments, and yellow, included *anthers*.—Woods; abundant. The name *Hyacínthus* was originally given to some species of Lily into which the youth Hyacinthus was fabled to have been changed by Apollo. The petals were marked with dark spots, arranged so as to resemble the Greek word AI, alas! The present species, however, having no such characters on its petals, was named *Hyacinthus non-scriptus* (not written) by Linnæus, and was also at one time made into the distinct genus *Agraphis*. It is sometimes confused with the Harebell (*Campánula rotundifólia*), the Bluebell of Scotland.—Fl. May, June. Perennial.

10. Ornithógalum (Star of Bethlehem).—Closely allied to *Scilla*; but the *flowers*, which are in a bracteate, sometimes corymbose, raceme, are white or yellow, but never blue; the *perianth*, which consists of 6 free, spreading segments, has a nectariferous gland at the base of each, and is persistent; and the *anthers* are versatile. (Name from the Greek *ornīthos*, bird's, *gala*, milk.)

1.* *O. nútans* (Drooping Star of Bethlehem).—*Bulb* large; *leaves* a foot or more in length, glaucous; *flowers* few, large, white, greenish outside, in a loose, drooping raceme with long, slender *bracts; filaments* 3-fid.—Naturalised in fields; rare.—Fl. April, May. Biennial.

2.* *O. umbellátum* (Common Star of Bethlehem).—*Bulb* smaller; *leaves* shorter, green, with a white stripe ; *flowers* 6—10, large, erect, white, with a broad green band externally, in a long-stalked, corymbose raceme.—In the neighbourhood of houses, not indigenous ; frequent.—Fl. April, May. Perennial.



ORNITHOGALUM PYRENÁICUM (*Spiked Star of Bethlehem*).

3. *O. pyrenáicum* (Spiked Star of Bethlehem).—

Bulb large ; *leaves* long, narrow, glaucous, withering very early in the season ; *flowers* numerous, in a long, erect raceme, with a stout, leafless peduncle about 2 feet high ; *bracts* lanceolate-acuminate ; *perianth-leaves* green, with white margins inside. Woods in the south ; rare, but very abundant near Bath, where the young shoots when in bud are sold as "French Asparagus."—Fl. June, July. Perennial.

*11. Lílium (Lily).—Herbaceous plants with scaly *bulbs*, cauline *leaves*, and large *flowers* with a deciduous *perianth* of 6 spreading, or reflexed, free segments, with a nectary ; *anthers* versatile. (Name, the Classical name of some such plants.)

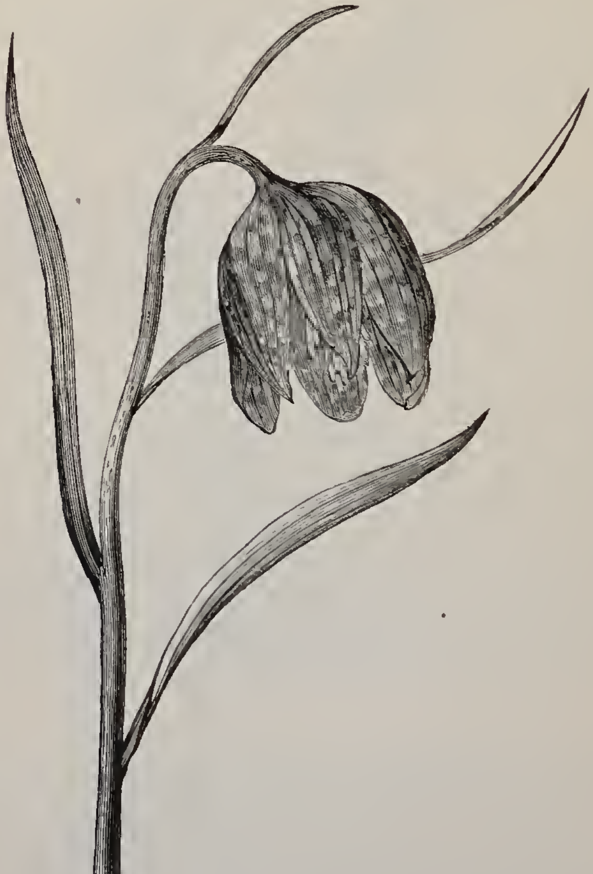
1.* *L. pyrenáicum* (Pyrenean Lily).—About a foot high, with scattered, linear-lanceolate *leaves*, and an umbel of a few, drooping, yellow *flowers* with black dots at the base of the revolute *perianth-leaves.*—Near South Molton, North Devon ; a garden escape.

2.* *L. Mártagon* (Turk's-cap Lily).—2 to 3 feet high, with downy *stem ;* whorled, lanceolate *leaves*, and a raceme of drooping, pale violet or pink *flowers* with dark red warts on the revolute *perianth-leaves.*—Woods at Mickleham, Surrey ; naturalised.—Fl. July—September. Perennial.

12. Fritillária (Fritillary).—Closely allied to *Lílium*, but with more drooping *flowers* with a bell-shaped *perianth* of which the segments are not recurved. (Name from the Latin *fritillus*, a dice-box, the common accompaniment of a *chequer-board*, which the marking of the flowers of some species resembles.)

1. *F. Meleágris* (Fritillary, Snake's-head).—The only British species, a beautiful plant, about a foot high, with a small *bulb* of 2—3 scales ; *stem* round,

leafy, 1—2-flowered; *leaves* linear-acute; *flower* drooping, generally solitary, shaped like a Tulip, curiously chequered with pink and dull red, rarely white.—



FRITILLÁRIA MELEÁGRIS (*Fritillary, Snake's-head*).

Water meadows in the south; rare.—Fl. May. Perennial.

13. Túlipa (Tulip).—Bulbous plants with radical and cauline *leaves* and usually large, solitary, erect *flowers* with bell-shaped, deciduous *perianth* of 6 free segments, recurved at their tips, without nectaries. (Name from the Persian *tulipan*, a turban.)

1. *T. sylvéstris* (Wild Tulip).—The only British species; *bulb* chestnut-brown; *stem* about a foot high, round, smooth; *leaves* few, linear-lanceolate, glaucous; *flower* bright yellow, fragrant; *perianth-leaves* tipped with hairs.—Chalk-pits; rare.—Fl. April, May. Perennial.

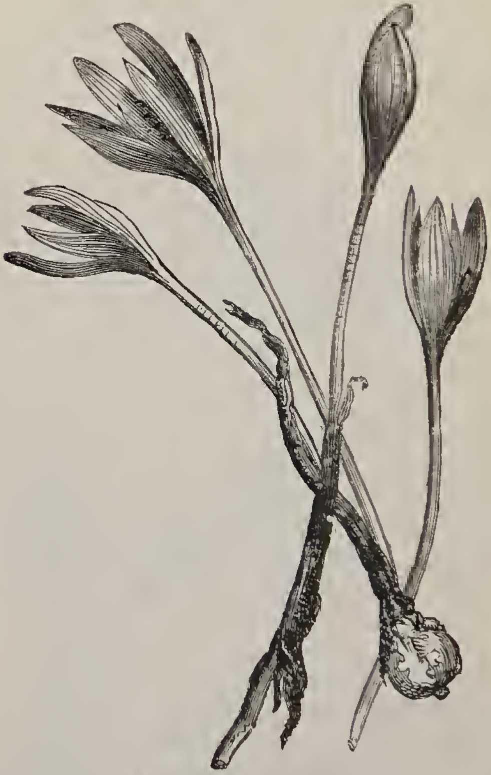
14. Gágea (Yellow Star of Bethlehem).—Bulbous plants with radical, linear *leaves;* few, small, yellow *flowers*, arranged in an umbellate manner; *perianth-leaves* 6, free, without nectaries, spreading, persistent. (Named in honour of Sir Thomas Gage, an English botanist.)

1. *G. fasciculáris* (Yellow Star of Bethlehem).—The only British species; *bulb* small; *radical leaf* commonly solitary, long and narrow; *scape* shorter than the leaves, with 2 opposite *bracts* and an umbel of yellow *flowers.*—Woods; local.—Fl. March—May. Perennial.

15. Llóydia (Spiderwort).—Small bulbous plants with slender, leafy *stem;* thread-like *leaves;* and 1 or 2 small, erect, white or yellow *flowers; perianth-leaves* 6, free, with transverse nectaries, spreading, persistent. (Named in honour of Edward Lloyd, the antiquary, who discovered it in North Wales.)

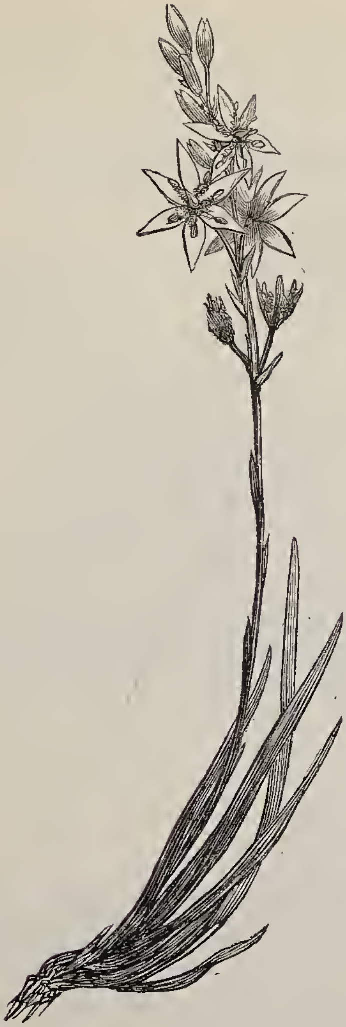
1. *L. alpína* (Mountain Spiderwort).—A pretty little plant, with 3-sided *leaves,* the radical ones longer than the 2—8 in. *scape*, which bears one white *flower* with red veins.—Snowdon; very rare.—Fl. June, July. Perennial.

16. Cólchicum (Meadow Saffron).—Underground *stem* a solid corm ; *leaves* all radical, produced in spring ; *flowers* mostly solitary, nearly sessile, erect, with a very long *perianth-tube*, resembling those of *Crócus*, but *stamens* 6, extrorse ; *ovary* superior ; *fruit* a capsule. (Name of Greek origin, from Colchis, a country famous for medicinal herbs.)



CÓLCHICUM AUTUMNÁLÉ (*Meadow Saffron*).

1. *C. autumnálé* (Meadow Saffron, Autumn Crocus).—*Leaves* lanceolate, dark green, glabrous, often



NARTHÉCIUM OSSÍFRAGUM (*Bog Asphodel*).

a foot long, produced in spring and withering in summer; *flowers* light purple or white, presenting no conspicuous difference from Crocuses except their 6 *stamens; ovary* remaining underground until the spring after flowering, when they are borne up by the elongating peduncle and ripen.—Meadows, especially on limestone; local.—Fl. September, October. Perennial. The leaves and fruit are poisonous to cattle.

17. NARTHÉCIUM (Asphodel).—Stiff plants, with a creeping, ascending *stem;* sword-shaped, equitant *leaves; flowers* in a raceme; *perianth-leaves* 6, free, spreading, golden-yellow, persistent; *style* 1; *capsule* 3-chambered. (Name from the Greek *narthex,* a rod.)

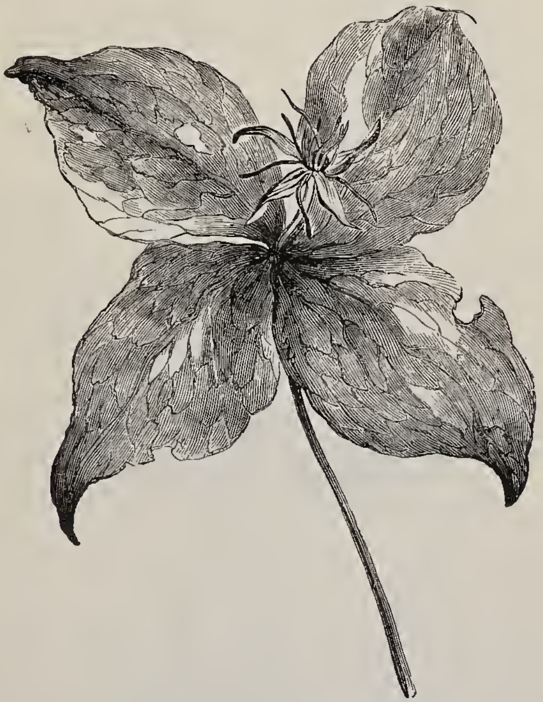
1. *N. ossífragum* (Bog Asphodel).—The only British species, an elegant little plant, 6—8 in. high, with tufts of narrow, grass-like *leaves,* and a tapering spike of star-like, yellow *flowers,* followed by long, orange-red *capsules.*—The name *ossífragum,* bone-breaking, was given to this plant from its being supposed to soften the bones of cattle that fed on it. Other plants have had the same property assigned to them, but there is little doubt that in every case the diseases in question are to be traced to the noxious exhalations from the bogs in which the plants grow, rather than to the plants themselves.—Fl. July—September. Perennial.

18. TOFIÉLDIA (Scottish Asphodel).—Very similar to the preceding genus, but with greenish *flowers* and a *fruit* consisting of 3 many-seeded follicles. (Name in honour of Mr. Tofield, a Yorkshire botanist of the 18th century.)

1. *T. palústris* (Mountain Scottish Asphodel).—The only British species, 4—6 in. high, with tufts of distichous, narrow, sword-shaped *leaves,* and almost stalkless, dense spikes of small, greenish-yellow *flowers,*

with 3 membranous *bracts* below each. — Boggy ground in the north; rare. — Fl. July, August. Perennial.

19. Páris (Herb-Paris). — Plants with a stout *rhizome;* erect, simple *stem,* bearing 4 whorled, net-veined *leaves,* and a solitary, terminal, green, generally 4-merous *flower,* succeeded by a berry-like *fruit.* (Name from the Latin *par,* equal, on account of the equal number of leaves in the several whorls.)



PÁRIS QUADRIFÓLIA (*Four-leaved Herb-Paris, True-Love Knot*).

1. *P. quadrifólia* (Herb-Paris, True-Love Knot).

—The only British species, a singular plant, about a foot high, with 4 large, ovate, acute *leaves ;* a rather large *flower* with narrow *perianth-leaves* and a black, 4-chambered *berry.*—Woods ; rather local.—Fl. May, June. Perennial.

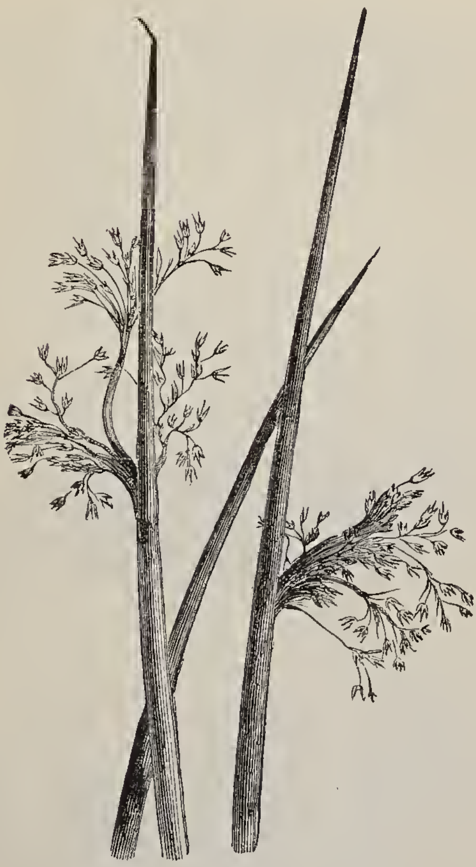
ORD. LXXXIII. JUNCÁCEÆ.—RUSH FAMILY.

An Order of plants mostly perennial and inhabiting marshy situations in temperate or arctic regions. They have mostly creeping *rhizomes ; stems* herbaceous, seldom branched, erect, often with considerable central pith ; *leaves* often resembling the stems, and filled with a pith-like internal tissue, or flat ; *flowers* small, green or brown, polysymmetric, and perfect, in cymose clusters ; *perianth* inferior, of 6 free, membranous, imbricate, persistent leaves ; *stamens* 6, rarely 3, with introrse anthers ; *ovary* 1—3-chambered, 3- or many-ovuled ; *style* 1 ; *stigmas* 3, slender ; *fruit* a capsule. The true Rushes (*Juncus*) are, for the most part, social plants, single species covering wide areas of marsh or bog and often proving of considerable use in fixing the soil. The stems of the common species were formerly used to strew the stone floors of castle halls in lieu of carpets, for twisting into cordage, and for wicks for tallow candles ; but are now seldom put to any use. The name Rush is extended to members of other Orders, the name Bulrush being applied to *Scírpus lacústris,* which belongs to the Sedge Family (*Cyperáceæ*) and to the genus *Typha,* which gives its name to the Order *Typháceæ,* whilst the name Flowering Rush is applied to *Bútomus umbellátus* in the Order *Alismáceæ.*

1. JÚNCUS.—Smooth plants generally with cylindric *leaves* ; *ovary* generally 3-chambered ; *ovules* many.

2. JUNCOÏDES.—More or less hairy plants, with flat *leaves* ; 1-chambered *ovary* ; *ovules* 3.

1. Júncus (Rush).—Smooth marsh plants, usually with a creeping *rhizome;* cylindric *leaves;* membranous *perianth; stamens* 6, rarely 3; *ovary* 1—3-chambered, many-ovuled; *stigmas* 3, wind-pollinated. (Name, the Classical Latin name of the plant, perhaps connected with *jungo*, I join, referring to the ancient use of the stems for twisting into cordage.)



JÚNCUS EFFÚSUS (*Soft Rush*).

** Perennial ; stems cylindric, tapering to a point ; leaves solid.*

1. *J. effúsus* (Soft Rush).—One of the commonest species, with soft, faintly striate *stems,* 1—3 feet high; *flowers* olive-green, in a loose, spreading, branched panicle; *perianth-leaves* lanceolate, longer than the blunt *capsule; stamens* 3.—Marshy ground ; abundant. —Fl. July. Perennial.

2. *J. conglomerátus* (Common Rush).—Mainly distinguished from *J. effúsus* by its usually more densely crowded, globose panicles of browner *flowers* and by its *capsule* ending in a point.—Marshy ground ; abundant.—Fl. July. Perennial.

3. *J. glaúcus* (Hard Rush).—Distinguished by its rigid, slender, deeply furrowed, glaucous *stems,* 12—18 in. high ; and very loose, much-branched, erect panicle of brown *flowers,* below the apex of the stem ; *perianth-leaves* narrow, as long as the oblong, mucronate *capsule ; stamens* 6.—Marshy places and roadsides ; common.—Fl. July, August. Perennial.

**J. diffúsus,* closely resembling *J. glaúcus,* but with softer, less furrowed *stem,* continuous *pith,* and obovoid *capsule,* is probably a hybrid between the two preceding species.

4. *J. bálticus* (Baltic Rush).—A widely creeping species, with few, rigid, very faintly striated *stems,* 1—2 feet high ; *flowers* brown, in small, flat-topped, slightly-branched, erect panicles ; *perianth-leaves* ovate-lanceolate, as long as the ovoid, mucronate *capsule ; stamens* 3.—Sandy shores in the North-east of Scotland ; rare.—Fl. July, August. Perennial.

5. *J. filifórmis* (Thread Rush).—A very slender, pale green species, less than a foot high, with faintly striate *stems ; flowers* few, pale, crowded in a small sessile cyme, about half-way up the stem ; *perianth-leaves*

lanceolate, longer than the roundish, blunt, mucronate *capsule; stamens* 6.—Stony lake shores in the north; very rare.—Fl. July, August. Perennial.

6. *J. acútus* (Great Sea Rush).—The largest British species, growing in circular tufts, with stout, rigid, sharply-pointed *stems* and *leaves* 3—6 feet high; brown *flowers* in a dense, branched, corymbose panicle; *perianth-leaves* half as long as the large, rounded, polished, mucronate *capsule.*—Sandy sea-shores; in great abundance in few places.—Fl. June—August. Perennial.

7. *J. marítimus* (Lesser Sea Rush).—Resembling the preceding, but irregularly tufted, with less stout, less rigid, erect, spinous *stems,* 1—2 feet high; similar *leaves;* very pale *flowers* in an interruptedly branched, erect panicle; *perianth-leaves* lanceolate, as long as the elliptic, mucronate *capsule.*—Salt marshes; frequent.—Fl. July, August. Perennial.

8. *J. triglúmis* (Three-flowered Rush).—*Stems* tufted, without runners, 3—6 in. high, round, leafless; *leaves* radical, awl-shaped, channelled, formed of 2 tubes internally; *flowers* 2—3, terminal; *capsule* pale red-brown.—Mountain bogs; rare.—Fl. July, August. Perennial.

9. *J. biglúmis* (Two-flowered Rush).—A very rare alpine species, 2—6 in. high, with leafless *stems* channelled down one side; *leaves* radical, awl-shaped, compressed; *flowers* 2, chestnut-brown.—Fl. July, August. Perennial.

10. *J. castáneus* (Clustered Alpine Rush).—Another very rare alpine species; *stem* 6—12 in. high, with runners and 2—3 channelled, hollow *leaves; flowers* bright brown, in 2—6-flowered, terminal, or sometimes also lateral, cymes; *perianth-leaves* lanceolate-acute, half as long as the pointed, chocolate-brown *capsule.*—Bogs on the summits of lofty Scottish mountains; very rare.—Fl. July, August. Perennial.

11. *J. trífidus* (Three-leaved Rush).—Another small species, with a creeping *rhizome;* crowded, slender, erect *stems,* 2—8 in. high; with one subulate *leaf* above, and others reduced to sheaths; *flowers* brown, 1—3 together between 2 long, leafy *bracts; capsule* ovoid, acute, longer than the perianth.—Mountain bogs in Northern Scotland, forming dense matted masses.—Fl. July, August. Perennial.

12. *J. squarrósus* (Heath Rush).—Well marked by its rigid *stems* and *leaves.* The *stems* are 6—12 in. high, erect, stout, solid, occurring in tufts, but unbranched and generally leafless; *leaves* mostly radical, rigid, half as long as the stem, grooved; *flowers* 2—3 together, brown, in a terminal panicle; *perianth-leaves* ovate-lanceolate, as long as the blunt, bristle-pointed *capsule.*—Moors and heaths; abundant. —Fl. June, July. Perennial.

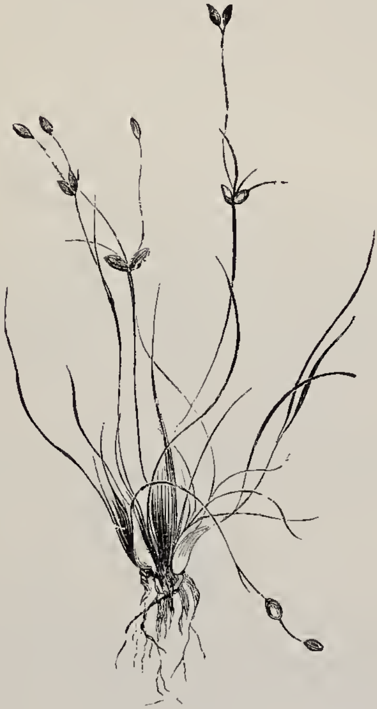
13. *J. ténuis* (Slender Rush).—*Stems* about a foot high, cylindric, very slender; *leaves* few, mostly radical, linear, grooved; *flowers* pale, some stalked, others not, in terminal panicles, shorter than the long, erect, thread-like *bracts; perianth-leaves* lanceolate, longer than the spherical *capsule.*—Moist sandy places, chiefly in the north and west; very rare.—Fl. June—August. Perennial.

14. *J. compréssus* (Round-fruited Rush). — A slender plant, about a foot high, with tufted *stems,* hollow, round and leafy below, compressed above, with ono linear, grooved *leaf* above; *flowers* brown, in a compact terminal panicle; *perianth-leaves* oval-oblong, blunt, shorter than the nearly round, bristle-pointed *capsule.*—Damp places; rare.—Fl. June—August. Perennial.

15. *J. Gerárdi* (Mud Rush).—*Stems* less tufted, 3-sided above; *perianth-leaves* as long as the strongly mucronate *capsule.*—Salt marshes; common. — Fl. June—August. Perennial.

** *Perennial ; stems solid ; leaves hollow, jointed internally.*

16. *J. obtusiflórus* (Blunt-flowered Jointed Rush.) —Erect, 2—3 feet high ; *stem* and *leaves* smooth and round ; *flowers* in clusters of 3—8, in repeatedly branched, spreading corymbs, pale, often reddish ; *perianth-leaves* blunt, as long as the ovate, mucronate, pale brown *capsule.*— Marshes ; not common. — Fl. July—September. Perennial.



JÚNCUS SUPÍNUS (*Lesser Jointed Rush*).

17. *J. acutiflórus* (Sharp-flowered Jointed Rush.) —*Stem* erect, 1—2 feet high, slender, slightly com-

pressed, 3—4-leaved; *leaves* slightly compressed, very conspicuously jointed when dry; *flowers* dark chestnut-brown, in dense clusters of 3—12, in a terminal, pyramidal, compound panicle; *perianth-leaves* acuminate, barely as long as the pale brown, beaked *capsule.* —Boggy places; common. — Fl. June — August. Perennial.

18. *J. supínus* (Lesser Jointed Rush).—A small and very variable plant, less than a foot high, erect or prostrate; with thread-like *stems;* bristle-like, slightly-grooved *leaves; flowers* in an irregular, little-branched panicle of a few distant clusters; *capsules* pale brown, oblong, blunt, mucronate.—Boggy places; common.—Fl. June—August. Perennial.

19. *J. alpínus* (Alpine Jointed Rush).—*Stem* erect, about a foot high, 2—3-leaved; *leaves* sessile, pointed, slightly compressed and striate, with few articulations; *flowers* in clusters of 3—8, in a repeatedly forked, erect, terminal panicle, black or dark brown; *bracts* acuminate; *perianth-leaves* blunt; *capsule* blackish, obtuse, mucronate, longer than the perianth-leaves.—In the North of Scotland; rare. Perennial.

20. *J. lampocárpus* (Shining-fruited Jointed Rush). —*Stem* erect, 1—2 feet high, slightly compressed, 3—6-leaved; *leaves* compressed, with many internal divisions; *flowers* in clusters of 4—8, in a repeatedly-forked, erect, terminal panicle; *perianth-leaves* shorter than the large, dark brown, glossy *capsule.*—Boggy places; common.—Fl. July, August. Perennial.

*** *Annual; stem hollow.*

21. *J. bufónius* (Toad Rush). — A very small species, 2—8 in. high, with slender, pale green, hollow, repeatedly-forked *stems;* few, narrow, bristle-like *leaves;* solitary, sessile, green *flowers,* which grow mostly on one side of the stem; and oblong, blunt *capsules,* shorter than the *perianth.* — Moist

places; abundant, often in large patches.—Fl. June—August. Annual.

22. *J. capitátus* (Capitate Rush).—A very small, tufted plant, with naked, erect, unbranched, bristle-like *stems*, 1—4 in. high; radical, thread-like, channelled *leaves*, 1—2 in. long; and large, terminal, bracteate heads of 3—10 sessile, pale *flowers; perianth-leaves* with slender, awn-like points, twice as long as the pointed *capsule; stamens* 3.—Sandy places liable to flooding, West Cornwall and the Channel Islands.—Fl. May—July. Annual.

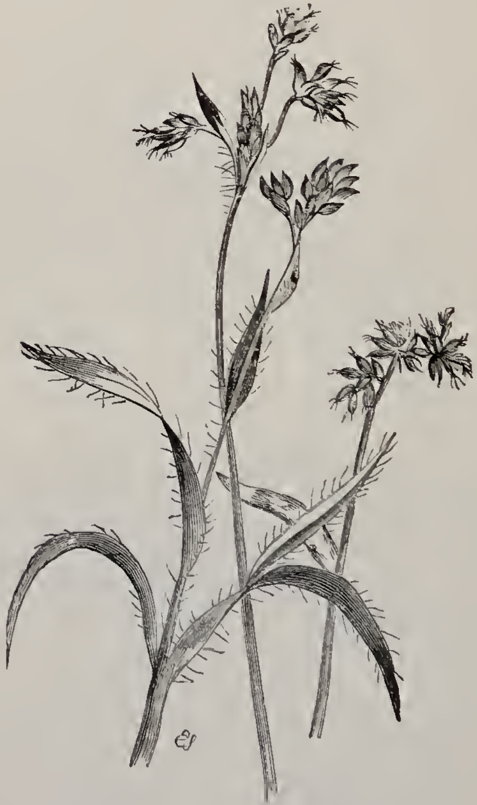
23. *J. pygmǽus* (Pigmy Rush).—A very small, tufted plant, 1—2 in. high, with slender, little-branched *stems; leaves* mostly radical, bristle-like; *flowers* in a few small clusters; *perianth-leaves* linear, acute, longer than the oblong-acute, 3-edged *capsule.*—Damp places near the Lizard.—Fl. May, June. Annual.

2. Juncoídes (Wood-Rush).—Differing from *Júncus* in having flat, more grass-like *leaves* more or less hairy, with long, weak, white hairs; *flowers* in clusters, with prominent *anthers*, wind-pollinated; *capsule* 1 chambered, 3-seeded. (Name formed from *Juncus*, and signifying *rush-like.*)

1. *J. Fórsteri* (Forster's Wood-Rush).—A slender plant, about a foot high; *leaves* linear, hairy; *flowers* on 1-flowered, erect peduncles in a loose, slightly branched cyme; *capsule* 3-sided, acuminate.—Shady places on calcareous soil in the south; rare.—Fl. March—June. Perennial.

2. *J. pilósum* (Broad-leaved Hairy Wood-Rush).—A very similar plant, with broader, soft, slightly hairy *leaves; flowers* 1—3 together, on peduncles which bend downwards in fruit; *capsule* 3-sided, blunt.—Woods; common.—Fl. April—June. Perennial.

3. *J. silváticum* (Great Wood-Rush).—A common woodland plant, with more of the habit of a Grass than a Rush, sometimes nearly 2 feet high; *leaves* linear-lanceolate, channelled, shining, with hairy edges; *flowers* 3—4 together, in a loose, doubly-compound, terminal panicle with long branches; *perianth-leaves* pale brown, awned, about as long as the ovoid, beaked *capsule.*—Woods; abundant.—Fl. April—June. Perennial.



JUNCOÍDES CAMPÉSTRE (*Field Wood-Rush*).

4. *J. arcuátum* (Curved Mountain Wood-Rush).—A small species, 2—5 in. high, with recurved *leaves* and a 3—5-rayed umbellate panicle of *flowers* in 3—5-flowered clusters on drooping stalks.—Summits of lofty Scottish mountains; very rare.—Fl. July. Perennial.

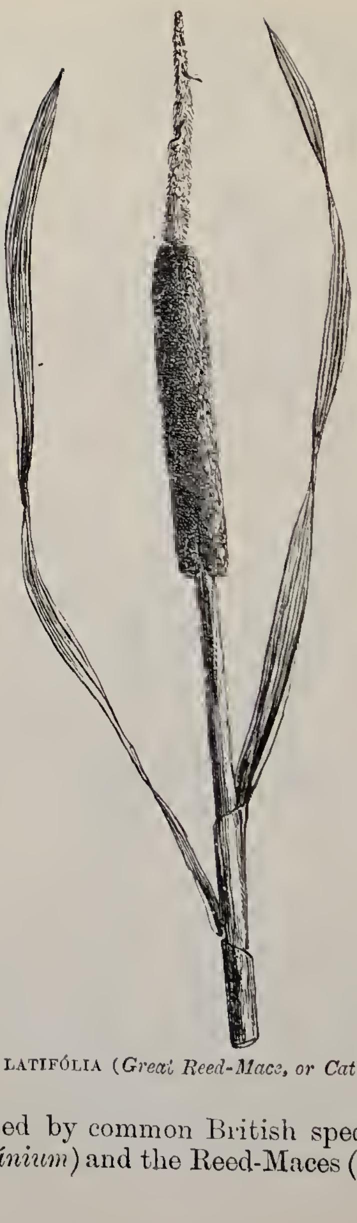
5. *J. spicátum* (Spiked Mountain Wood-Rush).—A slender species, 3—12 in. high, with a drooping, dense, spike-like panicle of *flowers.*—Mountains; rare.—Fl. July. Perennial.

6. *J. campéstrè* (Field Wood-Rush, Good Friday Grass, Chimney-sweeps).—An early spring meadow flower, 4—6-in high, with hairy, grass-like *leaves,* but distinguished by its panicles of 3 or 4 ovate, dense, 3—4-flowered clusters of dark brown, or almost black, *flowers,* suggesting a sweep's brush.—Pastures ; common.—Fl. March—May. Perennial.

7. *J. eréctum* (Many-flowered Wood-Rush).—A taller, stouter species, 8—20 in. high ; with panicles of numerous many-flowered clusters of *flowers,* sometimes pale brown, and sometimes on drooping peduncles.—Heaths, mountains and moist situations ; common.—Fl. June. Perennial.

ORD. LXXXIV. TYPHÁCEÆ.—REED-MACE FAMILY.

A small Order of marsh and water plants with creeping *rhizomes ;* sword-shaped, linear *leaves,* sheathing at their bases ; and numerous, small, monœcious *flowers,* which are only rendered conspicuous by being crowded in compact cylindrical spikes or globose heads, the staminate flowers being nearest the apex of the inflorescence ; *perianth* of 3 scales, or a tuft of hairs, persistent ; *stamens* 1—6, distinct, or united by their filaments ; *ovary* superior, 1-chambered, 1-ovuled ; *fruit* indehiscent, often angular from mutual pressure. The Order contains only two genera, both of which



TÝPHA LATIFÓLIA (*Great Reed-Mace, or Cat's-tail*).

are represented by common British species, the Bur-reeds (*Spargánium*) and the Reed-Maces (*Týpha*). The pollen of the latter is made into cakes in Scinde and in New Zealand.

1. Týpha. — *Flowers* in long, dense, cylindrical spikes.

2. Spargánium.—*Flowers* in globular heads.

1. Týpha (Reed-Mace).—Herbaceous, aquatic plants with sword-shaped *leaves;* long, dense, cylindrical, brown spikes of pistillate *flowers,* surmounted by a more slender, deciduous spike of staminate ones; *perianth* of 2 or 3 slender hairs; *stamens* 3, monadelphous; *ovary* stalked; *style* slender. (Name from the Greek *tuphos*, a marsh, where these plants grow.)

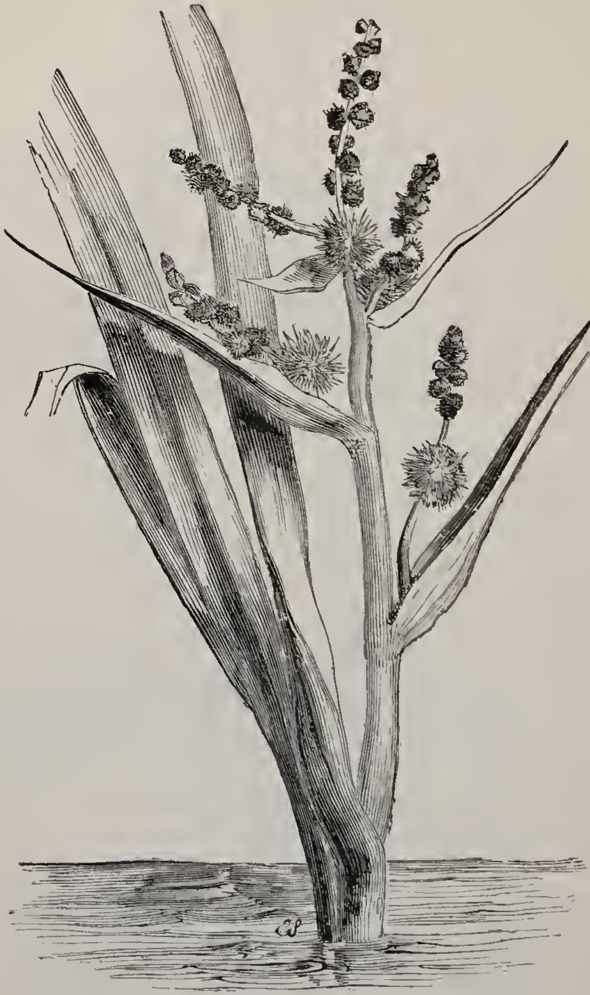
1. *T. latifólia* (Great Reed-Mace, or Cat's-tail).—Our largest herbaceous aquatic, often growing 6—8 feet high, with nearly flat, linear, glaucous *leaves*, and stout, cylindrical *peduncles,* surmounted by a club-like spike of pistillate *flowers* which is continuous with that of staminate flowers.—Ponds; common. Often called *Bulrush,* a name properly belonging to the large rush-like *Scírpus lacústris.*—Fl. July, August. Perennial.

2. *T. angustifólia* (Lesser Reed-Mace, or Cat's-tail).—Smaller and more slender, with narrow *leaves* grooved below, not glaucous, longer than the flowering stems, and the long, slender spike of pistillate *flowers* separate from the staminate one. — Ponds; less frequent. Both these species are now largely sold as ornaments. —Fl. July, August. Perennial.

2. Spargánium (Bur-reed). — Graceful aquatics with sword-shaped *leaves* and *flowers* in distinct, dense, globular heads; *perianth* 3—6-leaved, membranous; *stamens* 2—3, distinct. (Name in Greek denoting a little band or strap, from the ribbon-like leaves.)

1. *S. ramósum* (Branched Bur-reed). — A large aquatic with erect, branched *stem,* 1—4 feet high;

leaves erect, sword-shaped, triangular at the base with



SPARGÁNIUM RAMÓSUM (*Branched Bur-reed*).

concave sides; linear *bracts;* 1—3 lower *heads*, larger, pistillate; upper, half the size, staminate, olive-brown in bud, deciduous; *fruits* broadly ovoid, abruptly and shortly beaked.—Ditches; common.—Fl. June, July. Perennial.

2. *S. negléctum* (Overlooked Bur-reed).—A very similar plant, differing chiefly in the *fruits*, which, when ripe, are obovate, tapering gradually into a long beak.

3. *S. símplex* (Unbranched Upright Bur-reed).—A smaller plant with unbranched *stem; leaves* triangular at the base, with flat sides, sometimes floating; *heads* in a raceme, the lower pistillate ones shortly stalked; the staminate ones sessile, yellow; *fruits* resembling those of *S. negléctum*, but smaller.—Ditches; common. —Fl. June—August. Perennial.

4. *S. affíné* (Floating Bur-reed).—A weak, unbranched, floating plant, with very long, grass-green, flat, floating *leaves;* several staminate *heads;* and stalked, long-beaked *fruits.*—Lakes; rare.—Fl. August Perennial.

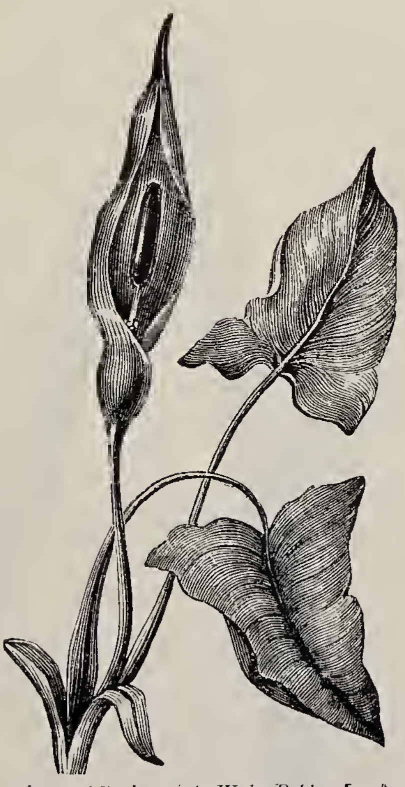
5. *S. mínimum* (Least Bur-reed).—A more slender form, with pale, pellucid *leaves;* 1—2 staminate *heads;* and sessile, short-beaked *fruits.*—Lakes and ditches; more common.—Fl. July, August. Perennial.

ORD. LXXXV. AROÍDEÆ.—THE CUCKOO-PINT FAMILY.

A considerable Order of curious plants, many of which much resemble our British Lords-and-Ladies (*Arum maculátum*). They abound in tropical countries, and possess acrid or even poisonous qualities, which, however, may be dissipated by heat. They mostly have fleshy, underground *stems*, often large, starchy corms, with their small *flowers* on a simple fleshy peduncle or *spadix*, and enclosed in one large, sheathing *spathe.* The *flowers* are either perfect or monœcious; the *perianth* absent or represented by 4—8 scales; *stamens* 1—8; *ovary* 1—3-chambered, superior; *fruit* berry-like. Some species of *Amorphophállus*, natives of tropical Asia, have enormous corms: the Dumb-Cane of the West Indies (*Dieffenbáchia seguína*) is so-called from producing, when chewed, a violent and painful swelling of the tongue and uvula: species of *Caládium* are cultivated for their variegated leaves; and those of *Anthúrium* for their spathes, which are sometimes a brilliant scarlet, for which reason the name Flamingo-flower has been applied to them. *Zantedéschia æthiópica*, under the name of Trumpet-lily or Calla, is one of the best known members of the Order. In South Africa it is known as the Pig-lily, pigs feeding on its corms. An attempt has been made to utilise the starch in these stems, but it is mixed with numerous needle-like crystals. These *raphides*, as they are called, are also abundant in our British *Árum maculátum*, an acridly poisonous plant, the corms of which were formerly, however, collected in the Isle of Portland for the manufacture of Portland Arrowroot. The Sweet Sedge (*Ácorus Cálamus*), another British species, has no raphides. This plant in olden times supplied the "rushes" with which, before the use of carpets had been introduced into England, it was customary to strew the floors of the great. As it did not grow near London, but had to be fetched at considerable expense from Norfolk and Suffolk, one of the charges of extravagance brought against Cardinal Wolsey was that he caused his floors to be strewed with fresh rushes too frequently. Its bitter rhizome is used in herb-beers, gin, and snuff. Most species of the Order give out a considerable amount of heat within the spathe at the time of flowering, so that the temperature rises noticeably above that of the external air. Many of them also have lurid colouring and a fetid odour.

1. Árum.—*Leaves* hastate, net-veined; *spathe* convolute; *flowers* monœcious; *perianth* absent.

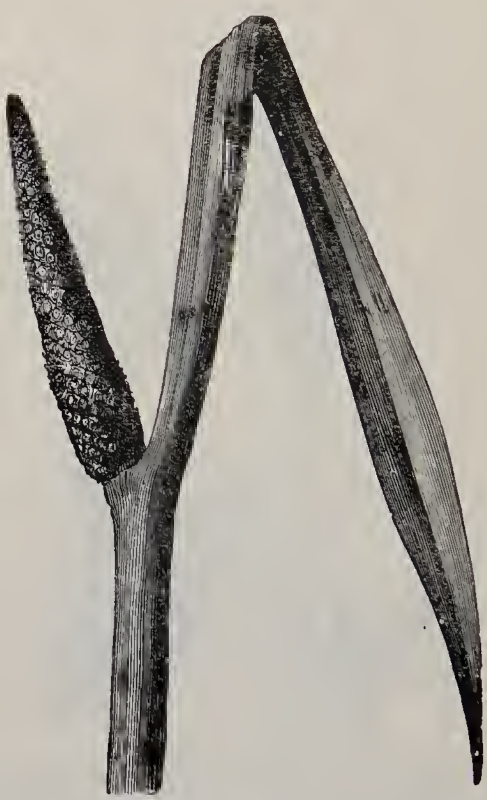
2. Ácorus.—Leaves sword-shaped, parallel-veined; *spathe* leaf-like, not convolute; *flowers* perfect; *perianth* 6-leaved.



Árum maculátum (*Cuckoo-pint, Wake-Robin, Lord's-and-Ladies*).

1. Árum (Cuckoo-pint).—*Rhizome* short, fleshy; *leaves* radical, hastate, net-veined, glabrous, with a sheathing petiole; *spathe* convolute, contracted above

the base; *spadix* terminated by a club-shaped, naked, fleshy *appendix; flowers* monœcious, the carpellate ones below, separated by some aborted ones from the staminate ones, above which are some more aborted



ÁCORUS CÁLAMUS (*Sweet Sedge*).

ones; *perianth* absent; *fruit* berry-like, 1-chambered, few-seeded. (Name, the Greek name of the plant.)

1. *A. maculátum* (Cuckoo-pint, Lords-and-Ladies, Wake-Robin).—A succulent, herbaceous plant, with

large, glossy, arrow-shaped, radical *leaves*, which are often spotted with dark purple. The pale yellow-green *spathe* is erect and twice as long as the *spadix*. They may be discerned wrapped up in the young leaf-stalks even before the leaves have risen above the ground. The *appendix* is a rich crimson, dull purple, or light pink, which is easily rubbed off, or yellow. At the base of the spadix are numerous sessile *ovaries* or carpellate flowers; above them a row with aborted styles; yet higher up several whorls of purple sessile *anthers* or staminate flowers; and above them some aborted ones or *staminodes*. The spathe and appendix soon wither, leaving the ovaries, which finally become a mass of scarlet berries, conspicuous in autumn.—Hedges and woods; common.—Fl. April, May. Perennial. The berries are poisonous.

2. *A. itálicum*, a larger species, with larger, longer-stalked, hastate, winter *leaves*, sometimes with yellowish veins; *spathe* three times as long as the spadix, nodding; *appendix* yellow.—Along the south coast; local.—Fl. June. Perennial.

2. Ácorus (Sweet Sedge).—*Rhizome* long; *leaves* radical, sword-shaped; *spathe* leaf-like, not convolute or contracted; *spadix* lateral, without an appendix; *flowers* perfect; *perianth* of 6 membranous segments; *stamens* 6; *ovary* 3-chambered, superior. (Name in Greek denoting that the plant has the power of curing diseases of the pupil of the eye.)

1. *A. Cálamus* (Sweet Sedge).—The only British species, an aquatic plant, with somewhat the habit of a Sedge, easily distinguished from all other British plants by the wavy margins of the *leaves*, the peculiar *spadix*, and the fragrance of the stems and leaves when bruised.—In water; rare.—Fl. June, July. Perennial.

ORD. LXXXVI. LEMNÁCEÆ.—DUCK-WEED FAMILY.

A small group of widely-distributed, minute, green plants, floating in standing waters, composed of leaf-like scales, with no distinction of stem and leaf, generally with unbranched, thread-like *roots* hanging downwards in the water, propagating themselves principally by offsets, but sometimes producing 1—3 minute *flowers*, which are monœcious, generally enclosed in a small, membranous *spathe; perianth* absent; *staminate flowers* each of a single *stamen; carpellate-flower* a 1-chambered, 1—7-ovuled *ovary; fruit* bladdery, indehiscent.

1. LÉMNA.—*Roots* present; *flowers* marginal; *spathe* membranous; *stamens* stalked, with 2-chambered *anthers.*

2. WÓLFFIA.—Rootless; *flowers* on the upper surface; *spathe* absent; *stamens* sessile; *anthers* 1-chambered.

1. LÉMNA (Duck-weed).—Minute, green, floating plants, with simple or lobed scale-like *fronds*; with thread-like *roots*; rarely producing 1—3 *flowers*, enclosed in a membranous *spathe*, in a marginal cleft; *stamens* stalked, with 2-chambered *anthers.* (Name, the Greek name of the plant.)

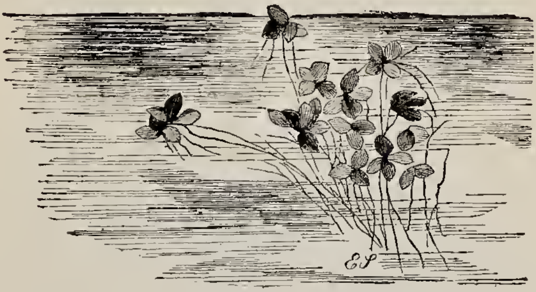
1. *L. trisúlca* (Ivy-leaved Duck-weed).—*Fronds* thin, pellucid, $\frac{1}{2}$—$\frac{3}{4}$ in. long, budding at right angles, obovate-lanceolate, each bearing 1 *root.* Bulbils are produced in autumn.—Stagnant water; frequent.—Fl. June. Annual.

2. *L. mínor* (Lesser Duck-weed).—*Fronds* compressed, opaque, paler beneath, not more than $\frac{1}{4}$ in. long, obovate, blunt, each bearing 1 *root.*—Stagnant water; often so abundant as to cover the surface, where, with the insects which it harbours, it is greedily devoured by ducks.—Fl. June—August. Annual.

3. *L. gíbba* (Gibbous Duck-weed).—*Fronds* flat

above, hemispherical and spongy beneath, opaque, pale, $\frac{1}{4}$—$\frac{1}{2}$ in. long, obovate, blunt, each bearing 1 *root.*—Stagnant water; uncommon.—Fl. June—September. Annual.

4. *L. polyrrhíza* (Greater Duck-weed).—*Fronds* dark green above, purple beneath, compressed, $\frac{1}{4}$—$\frac{1}{2}$ in. long, broadly obovate, each bearing many clustered *roots.*—Ponds and ditches; not common.—Flower not known in Britain. Annual



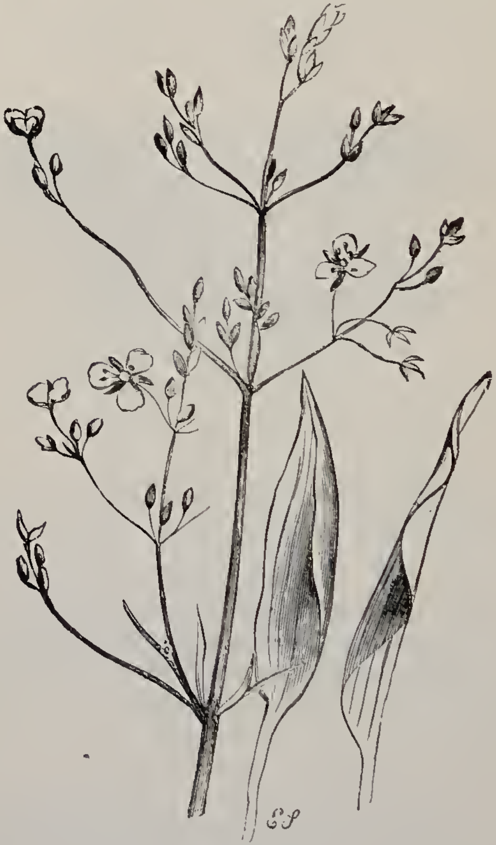
LÉMNA MÍNOR (*Lesser Duck-weed*).

2. Wólffia, represented by the one British species, *W. Michélii*, is the smallest known flowering plant, the rootless, flattish, sub-globular *fronds* not being more than $\frac{1}{20}$ in. long.—Ponds near London. The *flower* is not known in Britain.—Annual.

Ord. LXXXVII. Alismáceæ.—Water-Plantain Family.

A small but widely distributed Order of aquatic plants, often floating, with *leaves* chiefly radical, with long, sheathing *stalks*; *flowers* usually perfect; *perianth* of 6 distinct leaves in 2 whorls, the 3 inner, or all, coloured; *stamens* 6, 9, or more, hypogynous; *carpels* 3, 6, or more, mostly free, superior, 1- or more- seeded; *fruit* of achenes or follicles.

1. Alísma.—*Leaves* erect; *flowers* in whorls, perfect;



Alísma plantágo-aquática (*Great Water-Plantain*).

outer perianth-leaves green; *stamens* 6; *carpels* numerous, free, 1-seeded, indehiscent.

2. Elísma.—*Leaves* floating; flowers solitary; otherwise as in *Alísma*.

3. Sagittária.—*Leaves* erect, arrow-shaped; *flowers* in whorls, imperfect; otherwise as in *Alísma.*

4. Damasónium.—*Leaves* floating; *flowers* in whorls, perfect; *carpels* 6—10, united at the base, 1—2-seeded, dehiscent; otherwise as in *Alísma.*

5. Bútomus.—*Leaves* erect; *flowers* in an umbel, perfect; *perianth-leaves* all coloured; *stamens* 9 from the branching of the 3 outer; *carpels* 6, united at the base, many-seeded, dehiscent.

1. Alísma (Water-Plantain).—Aquatic plants with fibrous *roots;* erect *leaves; flowers* in whorls, perfect; *outer perianth-leaves* green; *stamens* 6; *carpels* numerous, free, 1-seeded, indehiscent. (Name, the Greek name of the plant, of doubtful etymology.)

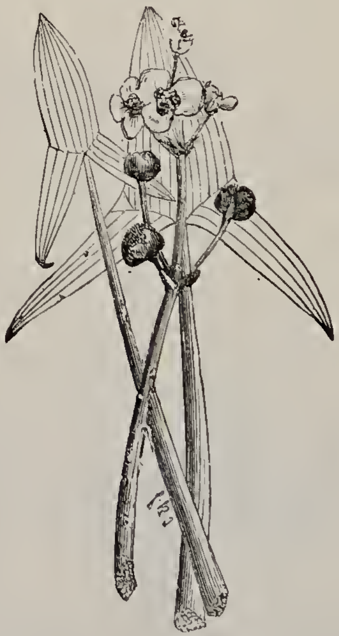
1. *A. Plantágo-aquática* (Great Water-Plantain).—A stout, herbaceous plant, 2—3 feet high, with large, long-stalked, radical *leaves*, ovate-lanceolate, 5—7-ribbed, like those of a *Plantain;* and a tall, erect, much-branched panicle of whorled *flowers*, the 3 *inner perianth-leaves* of which are very delicate, white or pale lilac, and soon fall off; *carpels* 20—30 in a ring.—Margins of rivers, lakes, and ponds; common. —Fl. June—August. Perennial.

2. *A. ranunculoídes* (Lesser Water-Plantain).—Much smaller than the last, with linear-lanceolate, 3-ribbed *leaves*, some of which are submerged or floating and pellucid; *flowers* in 1 or 2 umbellate whorls, larger than in the last; *carpels* in a globose head.—Peaty bogs; not uncommon.—Fl. May—September. Perennial.

2. Elísma (Floating Water-Plantain). — *Roots* fibrous; *stem* and *leaves* floating; *flowers* solitary from each node, stalked, white, with yellow claws to the *petals; carpels* 10—12; otherwise as in *Alísma.* (Name, another spelling of *Alísma.*)

1. *E. nátans* (Floating Water-Plantain).—A slender, often very long plant with *flowers* about ½ in. across. —Mountain lakes in the west; rare.—Fl. July, August. Perennial.

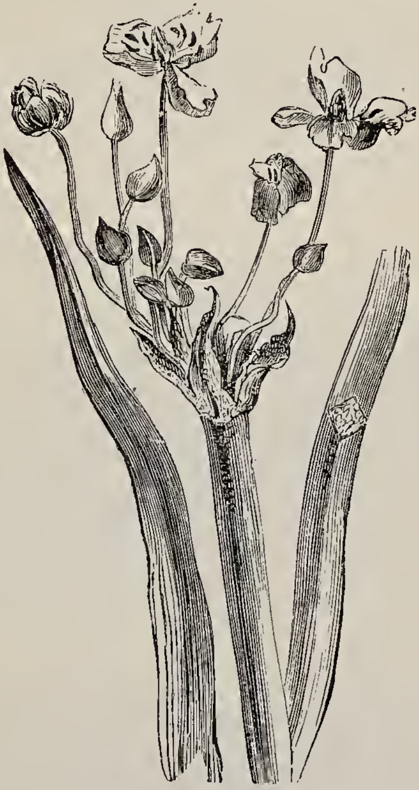
3. Sagittária (Arrow-head). — *Roots* fibrous; *leaves* erect, arrow-shaped, the basal lobes directed downwards; *flowers* in whorls, monœcious, the upper ones larger and staminate; *stamens* indefinite; *carpels* numerous, free, 1-seeded, indehiscent, in a head. (Name from the Latin *sagítta*, an arrow, from the shape of the leaves.)



Sagittária sagittifólia (*Common Arrow-head*).

1. *S. sagittifólia* (Common Arrow-head).—The only British species, a pretty plant, easily distinguished

by its arrow-shaped *leaves* and unbranched *peduncle*, with 3—5 whorls, each of 3—5 rather large, delicate, white or pinkish *flowers*, rising a few inches out of the water. — Rivers and ditches; not uncommon.—Fl. July—September. Perennial.



BÚTOMUS UMBELLÁTUS (*Flowering Rush*).

4. DAMASÓNIUM (Star-fruit, Thrumwort).—Aquatic plants with the habit of the Water-Plantains; but

with floating *leaves* and 6—10 *carpels* united at their base and spreading horizontally in the form of a star. (Name of uncertain origin.)

1. *D. stellátum* (Common Star-fruit).—The only British species; *leaves* long-stalked, cordate-oblong, 3—5-ribbed, floating; *flowers* in 1—3 whorls, stalked, white, $\frac{1}{4}$ in. across, with a yellow spot at the base of each petal; *fruit* generally of 6 rather large, 2-seeded, long-beaked, dehiscent *carpels*. Gravelly ponds and ditches in the south; rare.—Fl. June, July. Perennial.

5. BÚTOMUS (Flowering Rush), represented only by one species, *B. umbellátus*, is a tall aquatic with a creeping *rhizome*; sword-shaped, radical *leaves* 2—4 feet long; and numerous handsome, rose-coloured *flowers*, 1 in. across, in a terminal, bracteate, simple umbel, on a cylindric peduncle 2—3 feet high; the *perianth-leaves* are all petaloid; *stamens* 9, with red anthers; *carpels* 6, united at the base, many-seeded, dehiscent down one side.—Stagnant water and slow rivers; not uncommon. (Name from the Greek *bous*, an ox, and *témno*, I cut; because cattle were apt to cut their mouths with the leaves of some plant to which the name was originally applied.)—Fl. June, July. Perennial.

ORD. LXXXVIII. NAIADÁCEÆ.—POND-WEED FAMILY.

A small Order of aquatic and marsh plants, usually with a creeping *rhizome*; slender, branched, jointed *stems*; *leaves* sheathing at the base, often floating, sometimes almost leathery, but more frequently thin and pellucid; *flowers* small, inconspicuous, olive-green, sometimes solitary, but more frequently in spikes; *perianth* of 3—6 inferior, valvate scales, tubular, or absent; *stamens* 1—6, hypogynous; *carpels* 1—6, 1-ovuled, indehiscent, sometimes in distinct flowers from the stamens.

1. TRIGLÓCHIN.—*Leaves* linear; *flowers* ebracteate, perfect; *perianth* of 6 similar, erect, green leaves; *stamens* 6; *carpels* 3—6.

2. SCHEUCHZÉRIA.—*Leaves* linear; *flowers* bracteate, perfect; *perianth* of 6 similar, reflexed, green leaves; *stamens* 6; *carpels* 3, united below.

3. POTAMOGÉTON.—*Flowers* in a spike, perfect; *perianth* of 4 leaves; *stamens* 4; *carpels* 4, sessile.

4. RÚPPIA.—*Flowers* in a spike, perfect; *perianth* absent; *stamens* 2; *carpels* 4, at first sessile, afterwards each raised on a long stalk.

5. ZANNICHÉLLIA.—*Flowers* axillary, monœcious; *perianth* absent; *stamen* 1; *carpels* 2—6; *stigmas* peltate.

6. ZOSTÉRA.—*Flowers* monœcious, arranged alternately in 2 rows on a long leaf-like spadix; *perianth* absent; *stamen* 1, sessile, 1-chambered; *carpel* 1, sessile.

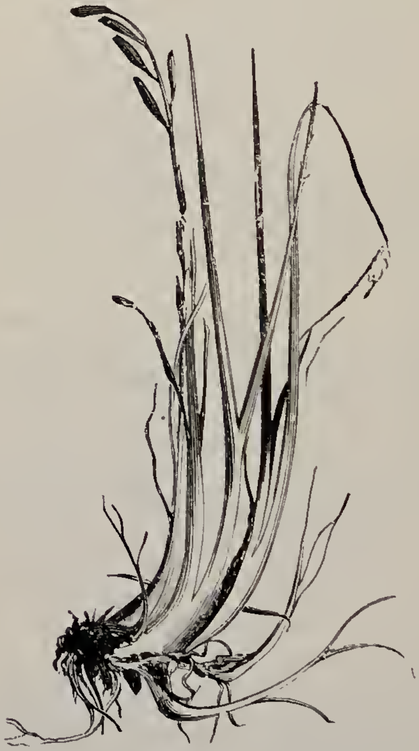
7. NÁJAS.—*Flowers* axillary, diœcious; *perianth* absent or 4-lobed; *stamen* 1, sessile, 1—4-chambered; *carpel* 1, sessile; *stigmas* 2—4, awl-shaped.

1. TRIGLÓCHIN (Arrow-grass).—*Roots* fibrous; *leaves* linear; *flowers* in an ebracteate raceme, small, green, inconspicuous, perfect; *perianth* of 6 similar, erect leaves; *stamens* 6; *ovary* 3—6-chambered, superior; *stigmas* feathery; *fruit* 3—6-seeded, separating into dehiscent carpels. (Name from the Greek *treis*, three, and *glóchin*, a point, from the pointed carpels.)

1. *T. palústré* (Marsh Arrow-grass).—A plant with something of the habit of *Plantágo marítima*, from which it may easily be distinguished by its fewer flowers and slenderer raceme, as well as by the different structure of the flowers. It has *runners; leaves* radical,

linear, fleshy, 8—10 in. high; *flowers* in a loose raceme; *fruit* linear, angular, of 3 combined *carpels.* Marshy places; common.—Fl. June—August. Perennial.

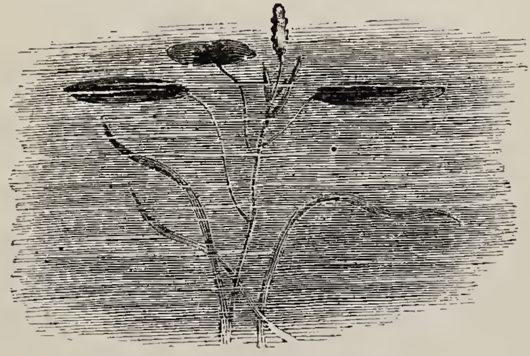
2. *T. marítimum* (Sea Arrow-grass).—Like the last, but larger, stouter, and well distinguished by its rounded, ovoid *capsule* of 6 combined *carpels.*—Salt marshes; common.—Fl. May—September. Perennial.



TRIGLÓCHIN PALÚSTRÉ (*Marsh Arrow-grass*).

2. SCHEUCHZÉRIA, represented by the one species *S. palústris*, has a long, creeping, *rhizome ; leaves* linear, semicylindric, with swollen brown sheaths; *flowers* 4—6, in a loose, bracteate raceme, perfect ; *perianth* of 6 similar, reflexed, green leaves ; *stamens* 6 ; *carpels* 3, united below.—Peaty bogs; very rare, found only in the **north.** (Name from the Swiss naturalists, the Scheuchzers.) Fl. July. Perennial.

3. POTAMOGÉTON (Pond-weed).—Floating or submerged plants, with translucent or opaque, leathery *leaves*, scattered or opposite, generally stipulate; *flowers* in a spike, perfect ; *perianth* of 4 small, green, valvate, persistent *leaves ; stamens* 4 ; *carpels* 4, sessile, free, 1-seeded. (Name from the Greek *pótamos*, a river, and *géiton*, a neighbour.)



POTAMOGÉTON NÁTANS (*Floating Pond-weed*).

* *Leaves scattered, or the upper opposite, oblong, obovate or lanceolate, involute ; stipules free.*

1. *P. nátans* (Floating Pond-weed).—An aquatic plant, with cord-like *stems*, proportioned to the depth

of the water in which it grows; *upper leaves* floating, on long stalks, smooth, leathery, elliptical to lanceolate, 2—6 in. long, with small auricles and very long, pointed *stipules*, *lower* not always present, submersed, reduced to very narrow linear phyllodes a foot long; *flowers* numerous, small, green, in dense cylindric spikes which rise above the surface of the water on stout, axillary *peduncles; carpels* rather large, keeled, with a short beak.—Ponds and ditches; common.—Fl. June—September. Perennial.

2. *P. polygonifólius.*—A more membranous plant with long-stalked *leaves*, the *upper* opposite, obovate to lanceolate, rounded at the base, *lower* linear-lanceolate; *flowers* in slender spikes on slender stalks; *carpels* very small, not keeled, red, with very short beak.—Ponds; very common.—Fl. June—September. Perennial.

3. *P. flúitans.*—A rare form with an unbranched *stem;* very long, submerged *leaves* and rather leathery, floating ones, and a *fruit* resembling that of *P. nátans.*

4. *P. colorátus* (Plantain-leaved Pond-weed)—*Leaves* mostly submerged, long-stalked, membranous, pellucid, beautifully netted, broader than those of the preceding species, elliptic-orbicular, on slender stalks, with short, broad, blunt *stipules*; very slender *peduncles; carpels* very small, rounded, green.—Peaty ditches; uncommon.—Fl. June—September. Perennial.

5. *P. alpínus* (Reddish Pond-weed).—*Stem* round, unbranched, 1—4 feet long; *leaves* reddish, lanceolate, translucent, *upper* short-stalked, broader, floating, or erect, rather leathery; *lower* submerged, sessile, many-nerved; *stipules* large, blunt; *flowers* in stout spikes on stout stalks; *carpels* ovoid, pointed, keeled, red.—Ditches; frequent.—Fl. July—September. Perennial.

6. *P. sparganiifólius* (Bur-reed-leaved Pond-weed), known only in Galway, has a slender, slightly-

branched *stem;* long *leaves*, the *upper* often absent, or long-stalked, floating, and rather leathery, the *lower* linear and many-nerved; and long *stipules*.

7. *P. lanceolátus* (Lanceolate Pond-weed).—A very rare species with very slender, fragile, *stem;* dark green, oblong, obtuse, pellucid, reticulate *leaves*, with slender, pointed *stipules*; *flowers* in short spikes on short, slender stalks, and *carpels* 3-toothed.—Rivers in Cambridge, Anglesea, and Down.—Fl. July—September. Perennial.

8. *P. heterophýllus* (Various-leaved Pond-weed).—*Stem* slender, round, 2—4 feet long, much branched below; *leaves* flat, *upper* floating, opposite, leathery, elliptic, *lower* submerged, lanceolate, flaccid; *stipules* small; *flowers* numerous in dense spikes on stout, axillary and terminal stalks which thicken upward; *carpels* small, 3-keeled, with a short beak.—Ditches; frequent.—Fl. June—September. Perennial.

9. *P. falcátus.*—A dark green or reddish-green plant, with a tuberous *rhizome;* slender, round *stem*, branched below; *leaves* amplexicaul, entire, flat, *upper* leathery, with 6 opaque ribs on each side of the midrib, *lower* with 3; *stipules* herbaceous, persistent; *flowers* in a dense, cylindric spike about an inch long on a slightly longer peduncle; *fruits* small, dark green, rounded, keeled with a prominent beak.—Near Ramsey, Huntingdon.

10. *P. nítens* (Glistening Pond-weed).—A closely allied, much branched form, with numerous rooting branches springing from the axils of its upper leaves; *leaves* usually all submerged, scattered, recurved, with a wavy margin and a shining surface; *flowers* in shorter spikes, thickening less upward.—Ditches; chiefly in the north; uncommon.—Fl. June—September. Perennial.

11. *P. lúcens* (Shining Pond-weed).—The largest British species; *stem* stout, 3—6 feet long; *leaves* mostly submerged, shortly-stalked, 4—10 in. long,

oblong-lanceolate, wavy, toothed, pellucid, many-nerved; *stipules* large, long, keeled; *flowers* in a stout, dense, cylindric spike on a short, thick stalk, thickening upward; *carpels* small, rounded, with a short, blunt beak.—Lakes; frequent. — Fl. June — September. Perennial.

12. *P. decipiens.*—A closely allied form with sessile, broad, pointed, scarcely toothed *leaves;* short, scarcely winged *stipules;* and shorter *flower-stalks.*

13. *P. angustifólius.*—An allied, but smaller, much branched species; *leaves* long-stalked, with entire margins, *upper* floating, obovate-oblong, wedge-shaped at the base, rather leathery, *lower* often recurved; *flower-spikes* 1—2 in., on very long stalks; *carpels* rounded.—Ponds; not common.—Fl. June—September. Perennial.

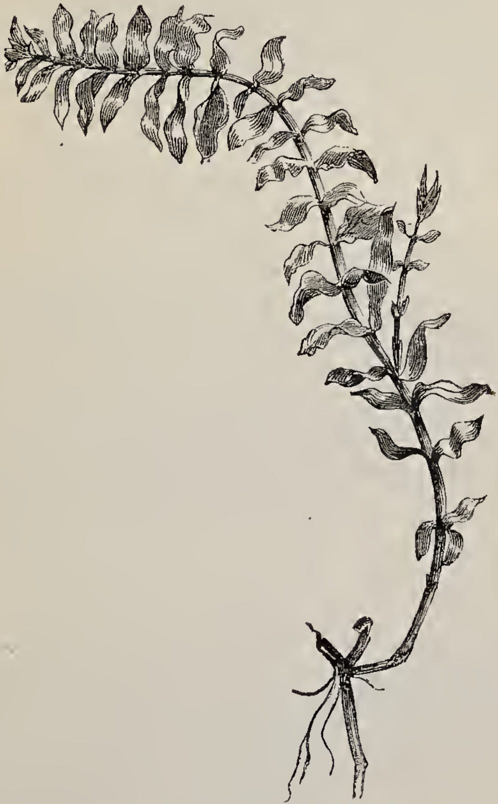
14. *P. Griffithii*, a rare form, with branched *stem; leaves* all submerged, 7—12 in. long, 11—17-nerved, narrow, boat-shaped at the apex; *stipules* long, narrow, and blunt; *flowers* in dense spikes on slender stalks shorter than the leaves; occurs only in Aber Lake, Carnarvonshire.—Fl. June—July. Perennial.

15. *P. prælóngus* (Long-stalked Pond-weed).—A similar species with stout, greenish-white *stem; leaves* linear-oblong, blunt, entire, half-sheathing, concave at the tip, 3-nerved; *stipules* large, blunt; *flowers* in dense cylindric spikes on very long, stout stalks; *carpels* large, with sharp keels.—Lakes and deep rivers; local.—Fl. May—July. Perennial.

16. *P. perfoliátus* (Perfoliate Pond-weed).—*Stem* round, stout, dichotomously branched; *leaves* all submersed, egg-shaped, 2—3 in. long, embracing the stem, pellucid, 5—9-nerved, brown, and almost transparent, having when dry the appearance of gold-beaters' skin, and so sensitive to moisture that they will curl when laid on the palm of the hand; *stipules* small, falling off; *flowers* in dense spikes on short, stout stalks; *carpels* scarcely keeled, with short beaks.—Ponds and

lakes; common. — Fl. June — September. Perennial.

17. *P. críspus* (Curly Pond-weed).—*Stem* slender, compressed, dichotomously branched; *leaves* alternate, close-set, 1—3 in. long, oblong, wavy, toothed, 3-nerved, spreading, and recurved; *stipules* small, blunt, falling off; *flowers* 6—8 in a loose spike on a tapering stalk; *carpels* with a long beak.—Ditches; common.—Fl. June—August. Perennial.



POTAMOGÉTON DÉNSUS (*Opposite-leaved Pond-weed*)

*** Leaves nearly opposite, involute, exstipulate.*

18. *P. dénsus* (Opposite-leaved Pond-weed).—*Stem* slender, brittle, dichotomously branched; *leaves* all submersed, embracing the stem, ovate, toothed, pellucid, 3—5-nerved, close-set, recurved; *flowers* few, in very short-stalked spikes; *carpels* with short, recurved beaks.—Ditches and ponds; common.—Fl. June—September. Perennial.

**** Leaves all similar, strap-shaped, with flat margins and free stipules.*

19. *P. zosteræfólius.*—*Stem* compressed, winged; *leaves* 4—10 in., acute, 3—5-nerved; *stipules* large, acute; *flowers* many, in cylindric, long-stalked spikes; *carpels* compressed, 3-ribbed. — Ditches; local.—Fl. July, August. Perennial.

20. *P. acutifólius.* — *Stem* compressed, narrower than in the preceding; *leaves* much as in the preceding but shorter and with narrower *stipules; flowers* in a very short oval, short-stalked spike; *carpels* compressed, with a recurved beak.—Lakes and ditches; rare.—Fl. June—August. Perennial.

21. *P. obtusifólius* (Grassy Pond-weed). — *Stem* slender, 4-angled, much branched; *leaves* sessile, linear, obtuse, dark green, opaque, 3-nerved; *stipules* broad, blunt; *flowers* few, in a dense, oval, short-stalked spike; *carpels* compressed, keeled, with a straight beak. — Ditches; frequent. — Fl. July, August. Perennial.

22. *P. Friésii.*—*Stem* thread-like, compressed; *leaves* often in tufts, linear, 1—3 in., 5—7-nerved; *stipules* small, acute; *flowers* few, minute, in an interrupted spike on a slender, compressed stalk; *carpels* small, swollen, bluntly keeled, with short, stout beak.—Ponds and ditches; local. — Fl. July, August. Perennial.

23. *P. pusíllus* (Small Pond-weed).—A tangled mass of thread-like *stems;* and dull, olive-green, narrowly-linear, 1—3 nerved, acute *leaves;* with numerous, small, loose, long-stalked spikes of brownish *flowers*, which are either submersed, or rise partially above the surface of the water.—Ponds and lakes; common.—Fl. June—August. Perennial.

24. *P. Sturróckii*, a very slender, delicate, and elegant form, closely allied to the preceding, with bright green, pellucid, 3—5-nerved, obtuse *leaves* 2—3 in. long; *flowers* in a very small spike on a very slender stalk; and *carpels* very small and shortly beaked, occurs only in Forfar and Perth.

25. *P. trichóides* (Hair-like Pond-weed).—*Stem* thread-like, with numerous spreading dichotomous branches; *leaves* bristle-like, spreading, stiff, acute, 1-veined, dark green, 1—2 in. long, with slender, acute *stipules; flowers* 3—6, very minute, on a slender stalk; *carpels* 1 in each flower, compressed, with a short beak.—Ponds; rare.—Fl. August—October. Perennial.

**** *Leaves all similar, submerged, linear, with flat margins and stipules united into a sheath.*

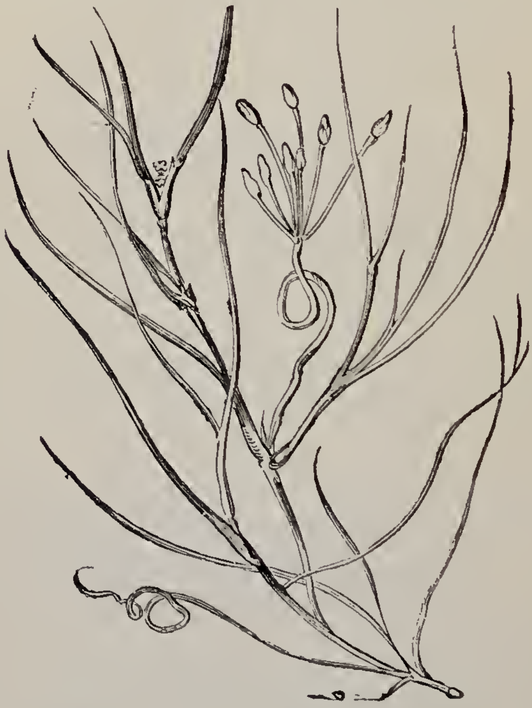
26. *P. pectinátus* (Fennel-leaved Pond-weed).—Forming dense tangled masses of thread-like *stems* with alternate branches; *leaves* 3—8 in. long, *upper* 1-nerved, of 2 hollow tubes, *lower* flat, 3-nerved; *flowers* few, in interrupted spikes on long, slender stalks; *carpels* large, swollen, slightly keeled, with short beaks.—Streams; common.—Fl. June—August. Perennial.

27. *P. interrúptus*, a closely allied form, with flat, 1—5-nerved *leaves* and obscurely keeled *carpels*, is less common.

28. *P. filifórmis* (Slender-leaved Pond-weed).—*Stem* thread-like, with short branches below; *leaves* hair-like, 1-nerved, channelled; *flowers* in dense, sepa-

rate whorls; *carpels* small, with very slight keels and beaks.—Lakes; local.—Fl. June—September. Perennial.

4. Rúppia (Tassel Pond-weed).—Slender, aquatic herbs with thread-like, sheathing *leaves* and minute, perfect *flowers* without a *perianth*; *stamens* 2; *carpels* 4, at first sessile, afterwards each raised on a long stalk. (Named in honour of H. B. Ruppius, a botanist of the 18th century.)



RÚPPIA SPIRÁLIS (*Spiral Tassel Pond-weed*).

1. *R. spirális* (Spiral Tassel Pond-weed).—A much-branched, thread-like plant, with the habit of

Potamogéton pectinátus, 2 feet or more long; *leaves* 1—3 in. long, with inflated sheaths; *flower-stalk* becoming spirally coiled, and 5—6 in. long, when in fruit; *carpels* with short beaks on stalks, 1—2 in. long.—Brackish-water ditches; rare.—Fl. July—September. Perennial.

2. *R. rostelláta* (Beaked Tassel Pond-weed).—A more common form, differing in the small, close sheaths of its *leaves*, its short, not spiral *flower-stalk*, and the longer beaks of its *carpels*.—Fl. July, August. Perennial.

5. ZANNICHÉLLIA (Horned Pondweed).—Slender, submerged plants, with linear *leaves* with sheathing bases and adherent *stipules*; minute, axillary, generally monœcious *flowers* without a *perianth*; *stamen* 1; *carpels* 2—6; *stigmas* peltate. (Named in honour of J. J. Zannichelli, a Venetian botanist.)

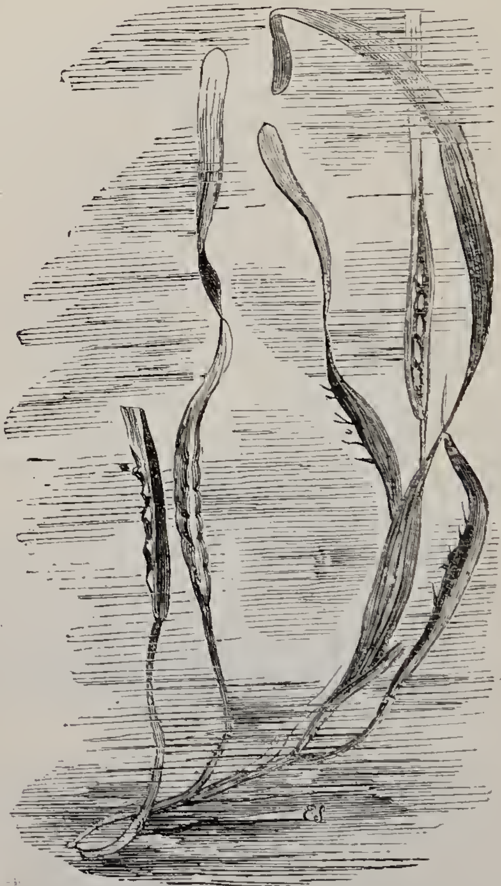
1. *Z. palústris* (Common Horned Pond-weed).—A submersed aquatic with the habit of the preceding genus; *stem* slender, 3—6 in. long, with spreading branches; opposite, thread-like *leaves* 1—3 in. long; *flowers* axillary, sessile or nearly so; *stamen* ½—1 in. long, with 4-chambered *anther*; *carpels* 2—4, sessile, with short *styles* and small crenulate *stigmas*.—Ditches; common.—Fl. May—August. Annual.

2. *Z. brachystémon*, the commonest form, differs in having a *stamen* only a quarter as long, with a 2-chambered *anther*, and a larger *stigma*.

3. *Z. pedunculáta*, a less common form, has a *stamen* of intermediate length, with a 2-chambered *anther*, long *styles*, large *stigmas*, and stalked *carpels*.

4. *Z. polycárpa*, a rare form, occurring in the Orkney Islands, has a very short *stamen* with a 2-chambered *anther*, 5—6 sessile *carpels*, with very short *styles* and large *stigmas*.

6. Zostéra (Grass-wrack).—Grass-like, submerged marine plants with creeping *rhizomes;* compressed



ZOSTÉRA MARÍNA (*Common Grass-wrack*).

stems; alternate, long, linear, sheathing *leaves* with adherent *stipules; flowers* monœcious, arranged alternately in 2 rows on a long, linear, membranous spadix, enclosed in a spathe; *perianth* absent; *stamen* 1, sessile, 1-chambered; *carpels* each with 1 *style*, 2 *stigmas*, and 1 *ovule*. (Name from the Greek *zostér*, a girdle or riband, from the form of the leaves.)

1. *Z. marína* (Common Grass-wrack).—A common plant in the sea, near low-water mark, with long, cord-like *stems*, bright green grass-like *leaves*, 1—3 feet long, 3—7-veined, and long, leafy sheaths or *spathes* to the bead-like rows of numerous simple *flowers*. The dried leaves and stems are collected, under the name of Alva, for stuffing mattresses and packing glass.—Fl. July—September. Perennial.

2. *Z. nána* (Dwarf Grass-wrack), an uncommon species, differs in having *leaves* not more than 6 in. long and 1—3-veined, and fewer *flowers* in a shorter spathe, with 2—5 inflexed, membranous appendages or clasping bands.—Fl. April—August. Perennial.

7. NÁJAS.—Slender, submerged, aquatic herbs with linear, whorled *leaves*, with adherent *stipules*; axillary, diœcious *flowers*; *stamen* 1, sessile, 1—4-chambered, enclosed in 2 sheaths or perianth-whorls; *carpel* 1, sessile; *stigmas* 2—4, awl-shaped. (Name from the Greek *naias*, a water-nymph.)

1. *N. fléxilis* (Flexible Najas).—A little, submerged plant, with thread-like, branched, brittle *stems*; linear, entire *leaves* in whorls of 3, about an inch long, bright green, pellucid, with ciliate sheaths; *flowers* 1—3 together.—Deep lakes, Perthshire, Skye, and Connemara.—Fl. August, September. Annual.

2. *N. marína* (Larger Najas).—*Stem* less branched; *leaves* in whorls of 2 or 3, strongly spinosely serrate, with entire sheaths; *flowers* solitary.—Hickling Broad, Norfolk.—Fl. July.

3.* *N. graminea*.—*Leaves* olive-green, in tufts with serrate sheaths.—In a canal at Ashton-under-Lyne; not indigenous.

ORD. LXXXIX. ERIOCÁULEÆ.—THE PIPE-WORT FAMILY.

A group of herbaceous plants chiefly inhabiting tropical swamps, with their *leaves* mostly radical, linear and sheathing, and often hollow; minute, imperfect *flowers* in a bracteate head; *perianth* inferior, of 2 whorls of 2—3 leaves each; *stamens* double the number of the inner perianth-lobes, but half of them often rudimentary; *carpels* 2—3, united; *style* single, terminal, short, persistent; *stigmas* 2—3, slender; *ovules* solitary in each carpel; *fruit* capsular.

1. ERIOCAÚLON (Pipe-wort). — *Staminate flowers* chiefly in the centre of the head, generally 2-merous; *outer perianth-leaves* spathulate; *inner* united in a tube. (Name from the Greek *erion*, wool, *kaulos*, a stem, some species having a woolly peduncle.)

1. *E. septangularé* (Common Pipe-wort).—A little submerged plant with a creeping *rhizome;* short, leafy *stem; leaves* subulate, 2—4 in. long, green, pellucid, compressed; *flowers* on a 6 — 8-angled *peduncle* from 6 in. to 2 feet high, in a small head with lead-coloured *bracts; outer perianth-leaves* black, fringed; *inner* with a black spot; *stamens* usually 4, with dark anthers.—Lakes in Skye and Connemara; but mainly North American.—Fl. August. Perennial.

SUB-CLASS II. GLUMÍFERÆ.

Flowers in spikelets (small spikes) each in the axil of one of the imbricate, rigid, chaff-like bracts or *glumes; perianth* absent or represented only by minute scales or bristles; *carpels* 1—3; *ovary* 1-chambered, 1-ovuled; *seeds* albuminous.

ORD. XC. CYPERÁCEÆ.—THE SEDGE FAMILY.

A large Order of grass-like and rush-like plants, comprising more than 2,000 species in about 60 genera, occurring in all parts of the world, but especially in the colder parts of the Northern Hemisphere, where they often cover large areas of marshy ground. Their *stems* are generally solid, often 3-angled, and without enlarged nodes; their *leaves* have a tubular sheath, and are generally linear, being commonly tristichous and sharply folded longitudinally; and their *flowers* are often imperfect. The *perianth* is often absent, or consists of three or more scales or bristles. The *stamens* are 1—6, usually 3 in number, with flattened *filaments* and basifixed *anthers*. The *ovary* is 1-chambered and sometimes 3-angled and enclosed in a flask-shaped membranous covering known as a *utricle* formed of 2 united bracteoles; there is a single terminal *style* and 2—3 cleft *stigma*; and the *fruit* is a small indehiscent, 1-seeded caryopsis.

The Sedges differ mainly in structure from the Grasses in their solid, angular stems with unswollen nodes; their tristichous leaves with unsplit tubular sheaths; their basifixed anthers; and their less feathery stigmas. They differ in a still more marked manner in their properties and uses to man. Their harsh leaves and stems contain but little sugar, and form but poor pasturage, nor do they seem readily susceptible of improvement under cultivation in the size of their grain. The stems of the Bulrush (*Scírpus lacústris*) are used for the rush bottoms of chairs, for making hassocks and mats, and by coopers for placing between the staves of casks. Those of the African *Papýrus antiquórum*, cut in slices, furnished the paper of ancient Egypt.

* *Spikelets many-flowered; flowers perfect.*

1. Cypérus.—*Spikelets* compressed; *glumes* in 2 rows, deciduous.

2. Eleócharis.—*Spikelet* solitary, terminal; *perianth* of 3—6 included bristles.

3. Scírpus.—*Spikelets* clustered, lateral; *perianth* of 3—6 included bristles, or absent.

4. Erióphorum.—*Spikelets* terminal; *perianth* of long exserted bristles becoming silky.

** *Spikelets* 1- *or few-flowered; flowers perfect.*

5. Rhynchóspora.—*Spikelets* clustered in heads, terete; *perianth* of 6 included bristles; *nut* beaked.

6. Schœnus.—*Spikelets* in compact terminal heads, compressed; *glumes* in 2 rows; *perianth* of few bristles, or absent; *nut* not beaked.

7. Cládium.—*Spikelets* terete; *perianth* absent; *nut* blunt, with a fleshy coat.

*** *Spikelets* 1—2-*flowered; flowers monœcious; perianth absent.*

8. Kobrésia.—*Upper flower* in each spikelet staminate, *lower* carpellate; *ovary* enclosed by a glume.

**** *Spikelets many-flowered; flowers imperfect.*

9. Cárex.—*Glumes* imbricate; *ovary* enclosed in a persistent bottle-shaped utricle.

1. Cypérus (Galingale).—*Stems* triangular; *spikelets* many, compressed, in terminal or lateral bracteate heads or compound umbels; *glumes* numerous; distichous, deciduous, each, except the outermost, containing a perfect *flower; perianth* absent. (Name from the Greek *kupeiros*, a reed.)

1. *C. fúscus* (Brown Cyperus).—*Stems* short, tufted, grass-like, 2—10 in. high; *spikelets* flattened, blunt, not more than $\frac{1}{3}$ in. long, in a compact umbel, with 3 unequal, leaf-like bracts, 1—4 in. long; *glumes* brown, with green keels.—Wet meadows in Middlesex, Surrey, and the Channel Islands.—Fl. August, September. Annual.

ELEÓCHARIS PALÚSTRIS (*Marsh Spike-rush*).

2. *C. lóngus* (Sweet Galingale). —A tall, stout

plant, 2—4 feet high, with a few *leaves* at the base of the stem; *spikelets* numerous in a very large, loose, unequally-rayed, compound umbel, with 2—3 long, leafy bracts; *glumes* numerous, blunt, reddish-brown, with green keels and pale margins.—Wet meadows in the South of England; rare. The aromatic rhizome was formerly much esteemed as a tonic.—Fl. August, September. Perennial.

2. **Eleócharis** (Spike-rush). — Tufted, glabrous herbs with slender *stems;* solitary, terminal *spikelets; glumes* numerous, imbricate, nearly all containing perfect *flowers; perianth* of 3—6 short bristles; *nut* compressed, tipped with the persistent base of the style. (Name from the Greek *hélos*, a marsh, *cháiro*, I rejoice.)

1. *E. aciculáris* (Least Spike-rush).—A slender, tufted plant; *rhizome* slender, creeping; *stems* subulate, 2—4, or even 12 in. high, with short *sheaths* at the base; *spikelet* minute, oblong, red-brown; *flowers* 6—8; *glumes* blunt; *stigmas* 3; *nut* minute, obovoid, ribbed, and transversely striate.—Wet sandy places; frequent.—Fl. July, August. Perennial.

2. *E. palústris* (Marsh Spike-rush).—A creeping plant with a stout, branched *rhizome* and many tufts of stems and leaves; *stems* not 6 in. high at edge of water, a foot or more high and more distant when in water, nearly round, with membranous, truncate *sheaths; spikelets* terminal, $\frac{1}{4}$—$\frac{1}{2}$ in. long, oblong; *glumes* numerous, dark brown, with pale, membranous edges and green keel; *outer bract* similar but rather larger; *perianth-bristles* 4—6; *style* 2-cleft; *nut* obovate.—Edges of pools; frequent.—Fl. June, July. Perennial.

3. *E. uniglúmis*, differing mainly in having the *outer bract* broader, so as to enclose the base of the

spikelet, occurs especially near the sea and is much less common.

4. *E. multicaúlis* (Many-stemmed Spike-rush).—A similar but smaller plant with *stems* in 1 tuft with obliquely truncate, acute *sheaths ;* rather smaller *spikelets ;* blunter *glumes : perianth-bristles* usually 6 ; *styles* usually 3-cleft ; *nut* obovate, 3-angled.—Bogs ; frequent.—Fl. July, August. Perennial.

3. Scírpus (Club-rush). — Mostly tall, aquatic plants with creeping *rhizomes ;* solitary or clustered, terminal or lateral *spikelets*, with 1 or 2 *outer bracts* broader and without flowers ; *perianth* of 1—6 included bristles, or absent ; *style* slender at the base. (Name, the old Latin name ; but said to be of Keltic origin.)

* *Spikelets small, terminal, solitary ; perianth of* 3—8 *bristles.*

1. *S. pauciflórus* (Chocolate-headed Club-rush).—*Stems* tufted, with long runners, round, striate, seldom more than 6 in. high, with a few thin, narrow scales and 1 tight truncate sheath ; *outer bracts* 2, blunt, shorter than the spikelet ; *flowers* not more than 5 or 6 ; *perianth-bristles* usually 6 ; *style* usually 3-cleft ; *nut* obovate, 3-angled, with tapering point.—In wet mud ; common.—Fl. July, August. Perennial.

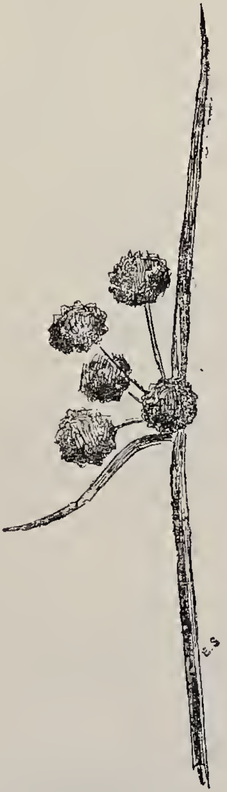
2. *S. cæspitósus* (Deer's-hair).—A similar species, with the *stem* covered at the base for 1 or 2 in. with imbricate *sheaths*, the outer brown, the inner green, with narrow leafy tips 1 to 2 lines long ; *spikelet* ovoid, brown, $\frac{1}{5}$—$\frac{2}{3}$ in. long ; *outer bract* as long as the spikelet, green, stiff ; *flowers* 6—8 ; *perianth-bristles* 4—6 ; *style* 3-cleft ; *nut* brown, obovate, pointed.—Bogs ; common.—Fl. June—August. Perennial.

3. *S. nánus* (Dwarf Club-rush).—A minute plant with long, creeping, hair-like *rhizome* with small *tubers* and distant, dense tufts, each of several round, grooved *stems*, 1—2 in. high, each with a close-pressed, transparent *sheath* ; *spikelet* minute, pale ; *outer bract* short, blunt, flowerless ; *perianth* of 4—8 bristles ; *nut* obovate, 3-angled, pale.—Sandy sea-shores in the south ; rare.—Fl. July. Annual.

SCÍRPUS SETÁCEUS (*Bristle-like Mud-rush*).

*** Spikelets small, lateral, sessile, clustered, or sometimes solitary; perianth absent.*

4. *S. flúitans* (Floating Mud-rush).—A slender, floating plant, rooting from its lower nodes and much



SCÍRPUS HOLOSCHŒNUS (*Round-headed Mud-rush*).

branched in a zigzag manner; *leaves* linear, very slender, 1—2 in. long; *spikelet* solitary, terminal, ovate, pale; *outer bracts* 2, shorter than the spikelet enclosing it; *flowers* few; *stigmas* 2; *nut* obovate, smooth, pointed, pale.—Ditches; common.—Fl. June, July. Perennial.

5. *S. cérnuus* (Savi's Mud-rush).—A slender, tufted plant, 3—10 in. high, with 1 or 2 narrow, channelled *leaves; spikelets* 1—3, sometimes an inch long; *outer bracts* not longer than the spikelet; *stigmas* 3; *fruit* sub-globose, 3-angled, pale, shining, rough with lines of minute raised points.—Bogs; rare.—Fl. July. Perennial.

6. *S. setáceus* (Bristle-like Mud-rush).—A very similar, but smaller, less slender, darker plant, 2—6 in. high, with 1 or 2 short, subulate *leaves* on each stem; *spikelets* usually 2—3 $\frac{1}{6}$—$\frac{1}{4}$ in. long, ovoid, lateral; *outer bract* long, subulate, resembling a continuation of the stem; *glumes* ovate, blunt, dark brown, with green midribs; *style* 3-cleft; *nut* very small, marked with about 8 longitudinal ribs and furrows.—Moist sandy places; common.—Fl. July, August. Perennial.

7. *S. Holoschœnus* (Round-headed Mud-rush).—*Stems* stiff, cylindrical, 1—4 feet high, with 1 or 2 stiff *leaves* sheathing their bases; *spikelets* very numerous and small, upwards of 30 together in compact globular heads, each $\frac{1}{4}$—$\frac{1}{2}$ in. diameter, of a light brown colour, forming a lateral umbel; the largest *outer bract* stiff, forming a continuation of the stem.—Sandy sea-shores in Somerset, North Devon, and the Channel Islands.—Fl. September, October. Perennial.

*** *Spikelets large; glumes many; perianth of* 1—6 *bristles.*

8. *S. lacústris* (Common Bulrush).—*Rhizome* creeping; *stems* sometimes as thick as a man's thumb, spongy, erect, 3—8 feet high, cylindric at the base, gradually tapering upwards, green, usually leafless, or with 1 or 2 short keeled *leaves* in still water, or with

long, nearly flat, floating leaves in running water; *spikelets* numerous, red-brown, ovoid, or oblong, $\frac{1}{4}$—$\frac{1}{2}$ in. long, in a compound, lateral, umbellate cyme, becoming terminal; *outer bract* continuing the stem; *glumes* broad, brown, fringed at the edge, notched at the top, with a little point in the notch, glabrous; *perianth* of 5 or 6 bristles; *anthers* tipped with hairs; *nut* 3-angled, smooth.—Marshes and rivers; common. The rhizome is astringent, and the stems are largely

SCÍRPUS LACÚSTRIS (*Common Bulrush*).

used for making the bottoms of chairs, hassocks, &c. —Fl. July, August. Perennial.

* The name Bulrush is now most commonly given to *Týpha* (see p. 757).

9. *S. Tabernæmontáni* (Glaucous Bulrush). — A closely-allied form with glaucous *stems*, *glumes* rough with raised dots, and *anthers* not bearded, occurring mostly near the sea.

10. *S. carinátus*, another closely allied form, has green *stems* becoming obtusely triangular near the top, smooth *glumes*, and *anthers* not bearded.—Tidal rivers in the south; rare.

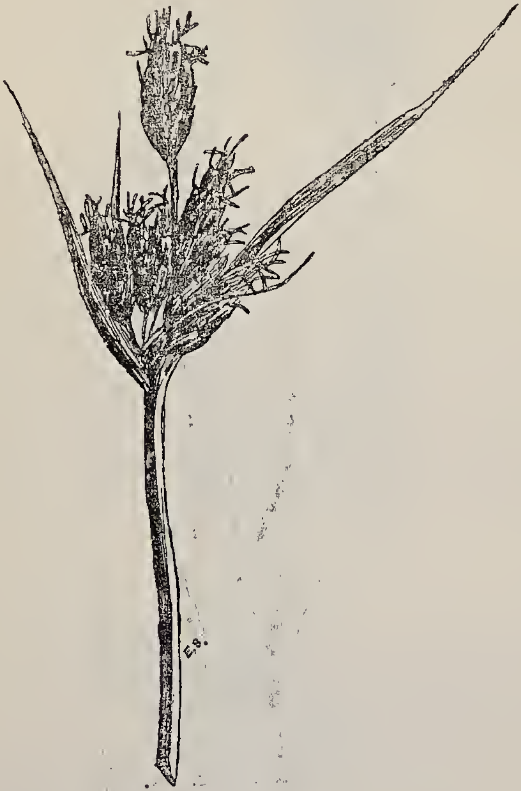
11. *S. tríqueter* (Three-edged Bulrush).—*Rhizome* slender; *stems* 2—3 feet high, acutely triangular throughout, leafless, except that 1 or 2 short *sheaths* at the base bear a short blade less than an inch long; *spikelets* usually 8, 10, or more, ovoid, less than ½ in. long, central ones sessile, the others stalked, forming a compound lateral cyme; *outer bract* stiff, triangular, continuing the stem for an inch or more; *glumes* brown, broad, notched or fringed at top, with a minute point; *perianth* of 2—6 bristles; *style* 2-cleft; *nut* smooth and shining.—Muddy banks of tidal rivers in the south; rare.—Fl. August, September. Perennial.

12. *S. púngens* (Sharp Club-rush).—An allied but smaller species, 6—18 in. high, with acutely triangular *stems*; 2 or 3 narrow, keeled *leaves* 4—6 in. long; 3—6 sessile, lateral *spikelets* each ½ in. long, in a close cluster; *glumes* brown, acutely 2-lobed.—Wet sand, Jersey.—Fl. June, July. Perennial.

13. *S. marítimus* (Sea Club-rush).—*Stems* sharply triangular, 1—3 feet high, leafy; *leaves* long, channelled, dark green, ½ in. across; *spikelets* 1—10, in a dense terminal cluster, the outer ones generally stalked, red-brown, about ¾ in. long; *bracts* several, leaf-like; *glumes* acutely 2-lobed with an awn between

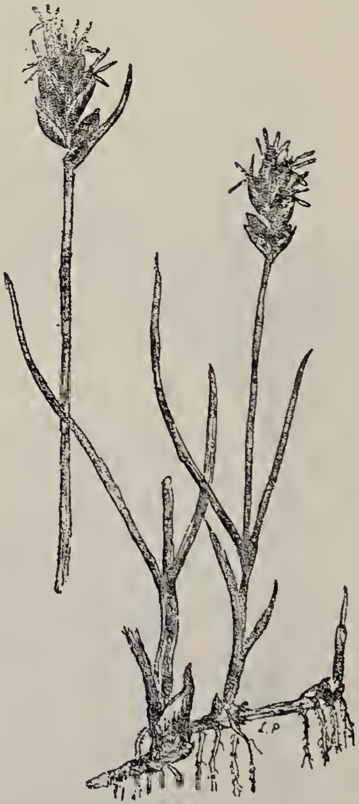
the lobes; *perianth* of 1—6 bristles; *style* usually 3-cleft.—Salt marshes; common—Fl. July, August. Perennal.

14. *S. sylváticus* (Wood Club-rush).—*Stem* 2—3 feet high, stout, leafy; *leaves* long, keeled, $\frac{1}{2}$—$\frac{3}{4}$ in. across; *spikelets* small, ovoid, dark shining green, very numerous, in a terminal, much-branched, compact



SCÍRPUS MARÍTIMUS (*Sea Club-rush*).

panicle ; *bracts* several, leaf-like ; *glumes* ribbed, obtuse, apiculate ; *perianth* of 6 bristles ; *style* 3-cleft.—Moist woods ; frequent.—Fl. July, August. Perennial.

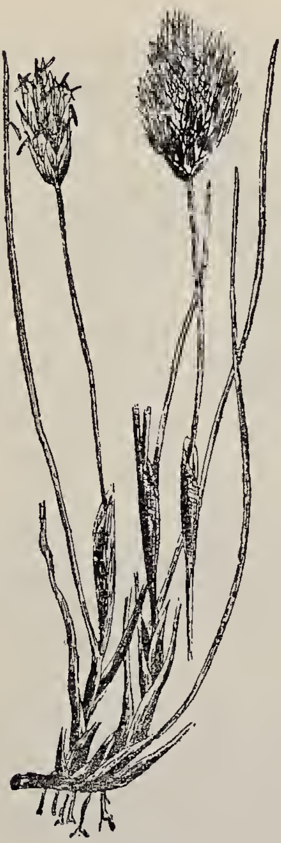


SCÍRPUS RÚFUS.

**** *Spikelets small, alternate, in a bracteate spike ; glumes few ; perianth of* 3—6 *bristles.*

15. *S. Cáricis* (Sedge-like Club-rush).—*Rhizome* creeping ; *stem* 6—8 in. high, triangular, sheathed at the base ; *leaves* linear, flat, rough ; *spike* about an

inch long, of 10—12 oblong, 6—8-flowered, pale brown spikelets, each about ¼ in. long; *stamens* usually 3; *style* 2-cleft; *nut* tapering.—Boggy places; not uncommon.—Fl. June, July. Perennial.



ERIÓPHORUM VAGINÁTUM (*Hare's-tail Cotton-grass*).

16. *S. rufús*, a plant of about the same size, with tufted, round *stems;* few, narrower, channelled, smooth *leaves; spike* ½—¾ in. long, of about 6 spike-

lets, each 2—4-flowered, with shining, dark brown *outer bracts*, as long as the spikelets.—Wet pastures, chiefly in the north; uncommon.—Fl. June, July. Perennial.

4. Erióphorum (Cotton-grass).—Tufted, herbaceous plants with terminal *spikelets;* numerous imbricate *glumes;* perfect *flowers; perianth* of hair-like bristles, forming long, cottony tufts.—(Name from the Greek *erion*, wool, *phero*, I bear.)

1. *E. alpínum* (Alpine Cotton-grass).—A plant resembling *Scírpus cæspitósus* in every respect but the long *perianth-bristles.*—Forfar; now extinct.—Fl. June. Perennial.

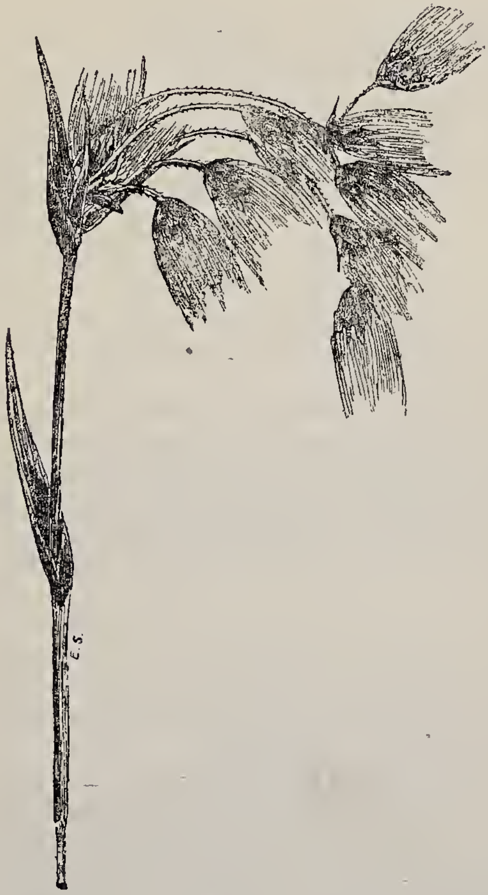
2. *E. vaginátum* (Hare's-tail Cotton-grass).—*Stems* many, tufted, not a foot high, but lengthening in fruit, round below, triangular above, with 1 or 2 inflated sheaths; *leaves* linear; *spikelets* solitary, terminal, ovoid, deep green, ½—¾ in., many-flowered; *perianth* of very many bristles, forming together a thick, nearly globular, cottony tuft, about an inch across.—Boggy moors; common.—Fl. April, May. Perennial.

3. *E. angustifólium* (Common Cotton-grass).—About a foot high, with solid, solitary *stems; leaves* channelled near the base; *spikelets* 4—12, in a terminal, umbellate cluster, the inner sessile, the outer on smooth peduncles; *perianth* of very numerous bristles, forming dense cottony tufts, 1—2 in. long.—Bogs; the commonest species. Attempts have been made to spin the cotton, but without much success. It is used for stuffing pillows, under the name of "Arctic Wool." —Fl. May, June. Perennial.

4. *E. latifólium* (Broad-leaved Cotton-grass).—*Stems* tufted, hollow; *leaves* flat; *spikelets* generally less numerous, on rough peduncles.—Less common.

5. *E. grácilé* (Slender Cotton-grass).—A very slender species, somewhat intermediate between the two last, sometimes 2 feet high; *leaves* channelled;

spikelets about 4, on downy peduncles. Bogs; very rare.—June, July. Perennial.



ERIÓPHORUM LATIFÓLIUM (*Broad-leaved Cotton-grass*).

5. RHYNCHÓSPORA (Beak-Sedge).—Tufted, leafy plants with terete *spikelets* clustered in terminal or

axillary heads, each 1—2 flowered; *glumes* many; *perianth* of 6 included bristles; *nut* beaked. (Name from the Greek *rhunchos*, a beak, *spora*, seed—the permanent base of the style forming a beak to the fruit.)

1. *R. fúsca* (Brown Beak-Sedge).—*Rhizome* long; *stems* 6—10 in. high, very slender; *leaves* few, subulate; *spikelets* brown, usually in two clusters, one terminal, the other lateral; *stamens* 3.—Bogs in the south; very rare.—Fl. July, August. Perennial.

2. *R. álba* (White Beak-Sedge).—*Rhizome* short; *stems* 6—18 in. high, slender, in dense grass-like tufts *spikelets* nearly white, in a small, compact, terminal cluster, often with one or two smaller, axillary, lateral clusters; *stamens* 2.—Spongy bogs; frequent.— Fl. June, July. Perennial.

6. Schœ́nus (Bog-rush).—Stiff, rush-like plants; *spikelets* closely sessile, in compact terminal heads, 1—4-flowered, with 3 or 4 empty *glumes*; *flowers* perfect; *perianth* of few bristles, or absent; *stamens* 3; *nut* not beaked. (Name from the Greek *schoinos*, a cord, some species having been used in making cordage.)

1. *S. ferrugíneus* (Brown Bog-rush).—*Stems* slender, tufted, about a foot high; *spike* narrow, oblong, rusty-brown; *lower bract* as long as the spike; *glumes* in 2 rows, with a smooth keel.—Loch Tummel, Perthshire; very rare. Perennial.

2. *S. nígricans* (Black Bog-rush).—A very similar. but less slender plant; *spike* obovoid, dark red, brown, or black, of 4—10 spikelets, with an involucre of 2—3 broad, brown, leafy *bracts*, with stiff points longer than the spike; *glumes* with a rough keel.—Bogs; frequent.—Fl. June, July. Perennial.

7. Cládium (Fen Sedge).—Usually tall, coarse, rough, grassy plants with very numerous terete *spike-*

lets in a compound panicle, 1—3-flowered; *glumes* 5—6; *perianth* absent; *nut* with a thick fleshy coat. (Name from the Greek *klados*, a twig.)

1. *C. jamaicénsé* (Prickly Fen Sedge).—*Rhizome* creeping; *stem* 3—6 feet high, stout, very leafy; *leaves* 2—4 feet long, ½ in. across, sheathing, keeled, glaucous, stiff, with minute sharp teeth along the keel and margins; *spikelets* pale brown, ¼ in. long, in numerous small clusters in corymbose, axillary panicles forming together a terminal leafy panicle a foot or more long; *stamens* usually 2; *nut* beaked.—Bogs; local. This plant used to be so common in the fens near Cambridge, before they were drained, that it was used in that town for lighting fires and for thatch. It forms floating islands in pools, and is still cut as a crop.—Fl. July, August. Perennial.

8. Kobrésia, represented by one species, *K. caricína* (Sedge-like Kobresia), a low, densely tufted plant with stiff *stems* 4—8 in. high; *leaves* radical, sheathing, wiry, grooved, 2—5 in. long; *spikelets* 4 or 5, short, brown, closely sessile in a short terminal spike, the *upper flower* in each spikelet bearing *stamens* only, and the *lower flower* an *ovary*; *perianth* absent; *style* long, 3-cleft.—Mountainous moorlands in the north; rare. —Fl. August, September. Perennial. (Named after Dr. Kobres, of Augsburg.)

9. Cárex (Sedge).—A large and well-defined genus of herbs with grass-like, chiefly radical *leaves*; monœcious, or rarely diœcious *flowers*, the stamens and ovaries being always in separate glumes, either in different parts of the same spikelet, which is then called "mixed," or in separate spikelets; *glumes* imbricate; *stamens* 3, rarely 2, without a perianth; *ovary* enclosed in a vase-shaped covering; *style* protruding;

stigmas 2—3. (Name Classical, connected with the Greek *keiro*, I cut, in allusion to the sharp-edged leaves.)

† *Spikelet simple, solitary, and terminal.*

1. *C. dióica* (Diœcious Sedge).—A slender plant, 6—12 in. high, with runners; *leaves* very narrow, smooth; *spikelets* bearing stamens only or pistils only, and with stamens and pistils on different plants, brown, the staminate ones cylindric and pale, the pistillate ovoid, brown; *style* 2-cleft; *fruit* erect, with rough edges.—Spongy bogs; common.—Fl. May, June. Perennial.

2. *C. Davalliána* (Davall's Sedge), a tufted plant, without runners, with rough edges to its *leaves* and drooping *fruit*, occurred formerly near Bath, but has been lost through drainage.

3. *C. pulicáris* (Flea Sedge).—A small tufted plant, without runners, 3—8 in. high; *leaves* narrow, erect, involute; *spikelet* about 9 lines long, the upper half bearing stamens; 3 to 7 of the lower glumes enclosing pistils; *style* 2-cleft; *fruit* oblong, pointed, about 2 lines long, drooping when ripe.—Bogs; common.—Fl. May, June. Perennial.

4. *C. rupéstris* (Rock Sedge).—A creeping, tufted plant, with runners; *stems* 3—6 in., 3-edged; *leaves* flat, stiff, revolute, ending in a wavy, rough point; *spikelet* ½—1 in. long, linear, dark brown, shining, the upper half staminate; *style* 3-cleft; *fruits* obovate, adpressed.—Lofty Scottish mountains.—Fl. July, August. Perennial.

5. *C. pauciflóra* (Few-flowered Sedge).—A slender species, with long runners; *stem* seldom more than 6 in. high, slender, 3-angled, smooth; *leaves* narrow, involute; *spikelets* pale brown, 3 or 4 lines long; *flowers* few, the 2 or 3 uppermost staminate, the 2 or 3 lower ones pistillate; *styles* 3-cleft; *fruit* narrow and pointed,

reflexed.—Moorland bogs in the north.—Fl. June, July. Perennial.

†† *Spikelets several, all similar, short, sessile, in a compound spike, mostly with both staminate and pistillate flowers; styles 2-cleft.*

6. *C. incúrva* (Curved Sedge).—*Root-stock* long, creeping; *stems* stout, 2—3 in. high, usually curved, so as to bring the large head of spikelets down to the ground; *leaves* channelled, involute, curved, about the same length; *spikelets* 3 or 4, in a dense, nearly globular head, each with a few staminate flowers at the top; *fruit* broad, rather inflated, tapering into a short beak projecting beyond the glumes.—Sandy shores in the north; rare.—Fl. June, July. Perennial.

7. *C. divísa* (Bracteate Marsh Sedge).—*Root-stock* stout; *stems* very slender, 1—3 feet high, erect; *leaves* long, narrow; *spikelets* few, short, crowded in a head with a leafy bract at its base, several upper *flowers* staminate; *fruit* plano-convex, not winged, with an acutely 2-fid, finely toothed beak.—Marshes near the sea; frequent.—Fl. May, June. Perennial.

8. *C. dísticha* (Soft Brown Sedge).—*Root-stock* creeping; *stems* stouter than in the preceding, 1—3 feet high; *leaves* long, narrow; *spikelets* in an oblong, interrupted spike, pale brown, the middle ones staminate; *fruit* ovate-lanceolate, narrowly winged.—Marshy places.—Fl. May—July. Perennial.

9. *C. arenária* (Sand Sedge).—*Root-stock* very long, stout, and branched, creeping over and binding the sands; *stems* tufted, 8—10 in. high, stout, rough, leafy at base; *leaves* radical, stiff, involute; *spikelets* many, rather large, ovoid, in an interrupted spike 1 or 2 in. long, the upper ones staminate, the lower pistillate, and the middle ones with flowers of both kinds; *fruit* ovate, veined, winged, shining chestnut-brown.—Sandy sea-shores.—Fl. June. Perennial.

10. *C. teretiúscula* (Lesser Panicled Sedge).—*Rootstock* creeping, with scattered tufts; *stems* 1—2 feet high, slender, 3-angled; *spikelets* few, oblong, acute, forming a dense compound spike about an inch long; *fruit* ovate, swollen, brown, shining, with 2—5 ribs on the back, beaked.—Boggy meadows.—Fl. June. Perennial.

CÁREX ARENÁRIA (*Sand Sedge*).

11. *C. paradóxa*, a rare form, intermediate between

the preceding and following species, more densely tufted than the preceding; *stem* covered below by the black fibrous remains of dead leaves; *spikelets* elongate, in a panicle somewhat interrupted below; *fruit* with numerous ribs near its base.—Bogs.—Fl. June, July. Perennial.

12. *C. paniculáta* (Great Panicled Sedge).—A stout species forming large tussocks, 2—4 feet across; *stems* stout, 1—4 feet high, triangular, rough, leafy; *leaves* long, narrow, flat; *spikelets* numerous, brown, crowded into a compound spike or panicle, 4—5 in. long, the lower branches spreading; *glumes* with bristly points and pale membranous margins; *fruit* ovate, beaked, with many faint veins.—Bogs; common.—Fl. June, July. Perennial.

13. *C. vulpína* (Great or Fox Sedge).—A stout tufted plant, 2—4 feet high, with runners; *stems* numerous, 3-angled, with rough edges, leafy; *leaves* broad, flat, sharply pointed; *spikelets* numerous, green or pale brown, crowded into a compound interrupted spike 1—3 in. long; *bracts* bristly, spreading; *fruit* much flattened, ovate, beaked, pale.—Wet places; common.—Fl. June, July. Perennial.

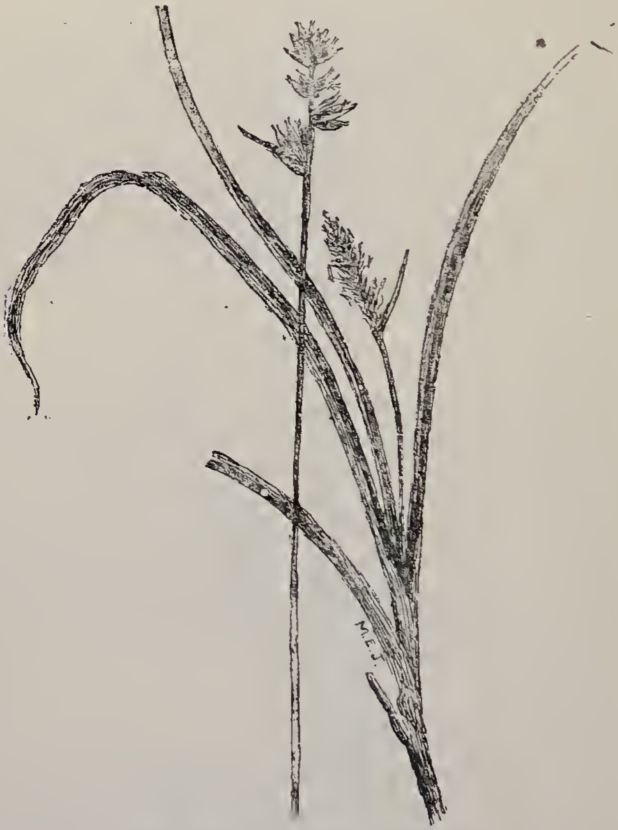
14. *C. vulpínöídes*, an allied North American species, has been recorded from the banks of the Thames near Kew.

15. *C. muricáta* (Great Prickly Sedge).—A densely tufted species, with short runners; *stems* 1—2 feet high, slender, 3-angled, rough; *leaves* narrow, flat; *spikelets* 4—6, rather short, brown or shining green, with a few staminate *flowers* at the top of each crowded into a terminal spike about an inch long, or the lower ones distant; *fruit* rather large, ovate, pointed, spreading, 2-fid, finely toothed above.—Gravelly pastures; common.—Fl. May, June. Perennial.

16. *C. divúlsa* (Grey Sedge).—An allied species with more slender, flaccid *stems* and 5 or 6 paler,

greyish, more distant *spikelets*, forming an interrupted spike, 2—3 in. long, occurs in moist, shady places.—Fl. May. June. Perennial.

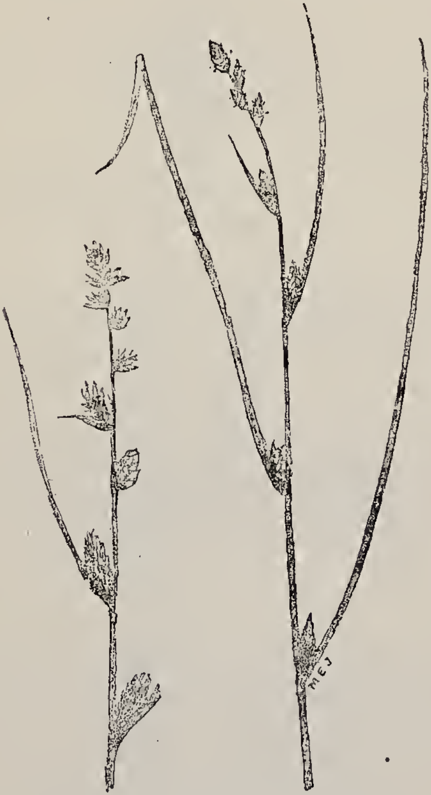
17. *C. echináta* (Lesser Prickly or Star-headed Sedge).—Tufted, rarely above 6 or 8 in. high ; *leaves* shorter than the stems ; *spikelets* 3—5, some distance apart, except sometimes the 2 uppermost, nearly globular when ripe, pale ; *fruit* spreading, broadly



CÁREX ECHINÁTA (*Star-headed Sedge*).

ovate, much beaked, about 2 lines long.—Boggy places; common.—Fl. May, June. Perennial.

18. *C. remóta* (Distant-spiked Sedge).—A tufted plant; *stems* slender, 1—2 feet high; *leaves* narrow; *spikelets* small, pale, a considerable distance apart, the lower ones each in the axil of a long, leafy bract; the lower *flowers* mostly staminate; *fruit* ovate-lanceolate, longer than the glumes, with notched beak.—Damp copses; common.—Fl. June. Perennial.



CÁREX REMÓTA (*Distant-spiked Sedge*).

19. *C. axillàris* (Axillary Sedge) possibly a hybrid between the preceding and *C. muricáta;* has taller, stouter, leafy *stems*, 1—2 feet high; flat *leaves*, and less distant *spikelets*, and the lowest spikelet is either branched, or there are 2 or 3 together; *glumes* broader, rigid.—Marshes; rare.—Fl. June, July. Perennial.

20. *C. Boenninghausiána*, possibly a hybrid between *C. remóta* and *C. paniculáta*, has slender, rough *stems*, 1—2 feet high; *spikelets* small, in a spike sometimes a foot long, the upper ones simple, the lower branched, without bracts, and with pale silvery-brown, smooth, membranous *glumes*.—Marshes; rare.—Fl. June, July. Perennial.

21. *C. elongáta* (Elongated Sedge).—Tufted, without runners; *stems* numerous, slender, about 2 feet high, rough, leafy; *leaves* long, narrow, flat, flaccid; *spikelets* many, pale greenish-brown, oblong, touching one another, without bracts; *fruit* spreading, linear-oblong, beaked, not winged, 2 lines long.—Marshes; rare.—Fl. July, August. Perennial.

22. *C. approximáta* (Hare's-foot Sedge).—A tufted plant, with short runners; *stems* wiry, 1—10 in. high, 3-angled, smooth; *leaves* flat; *spikelets* 2—4, small, fuscous, ovoid, touching one another, with minute *bracts;* *fruit* erect, elliptic, not winged, with a short beak; *glumes* reddish, ovate, nearly as long as the fruit.—Lofty mountains in Aberdeenshire; very rare.—Fl. July, August. Perennial.

23. *C. cúrta* (White Sedge).—Tufted, without runners; *stems* slender, 12—18 in. high; *leaves* not quite as long; *spikelets* 4—8, some distance apart, elliptical, 3 or 4 lines long, pale green; *glumes* membranous, whitish, with a green keel; *fruit* erect, broadly ovate, compressed, acute, with a short beak, faintly ribbed, not longer than the glumes.—Bogs; common.—Fl. June, July. Perennial.

24. *C. helvola* differs in having fewer *spikelets*, few-

flowered ; *glumes* browner ; *fruit* with a deeply 2-fid beak.—Mountain bogs in the north.

25. *C. ovālis* (Oval-spiked Sedge).—*Stems* about a foot high, loosely tufted at the base, without runners ; *leaves* shorter, narrow, flat, with fine points ; *spikelets* about 6, sessile, distinct, but close together, ovoid, pale brownish-green, shining, about 4 lines long, with a few staminate flowers at the base of each ; *fruit* yellowish, erect, ovate-acuminate, with a membranous

CÁREX OVĀLIS (*Oval-spiked Sedge*).

toothed margin.—Wet places; common.—Fl. June, July. Perennial.

††† *Spikelets several, dissimilar, the terminal one or more usually wholly staminate, the other (axillary) ones bearing pistils only, or pistillate and staminate flowers.*

26. *C. alpína* (Alpine Sedge).—A rather slender species, 6—18 in. high, tufted, with short runners; *leaves* short, narrow, flat, recurved; *spikelets* 2—4 close together, ovoid, black or dark brown; *styles* 3-cleft; *fruit* green, obovoid, shortly beaked, projecting beyond the glumes.—Clova Mountains; rare.—Fl. July, August. Perennial.

27. *C. atráta* (Black Sedge).—Another tufted alpine species, with runners; *stems* 6—18 in. high, smooth; *leaves* broad and flaccid; *spikelets* 3—6, oblong, shortly stalked, near together, 8 or 9 lines long, very dark brown or black, ultimately drooping; *outer bract* leafy; *styles* 3-cleft; *fruit* elliptical, very acutely triangular when ripe, with a short beak.—Mountains of Scotland, Westmoreland, and North Wales.—Fl. June, July. Perennial.

28. *C. fúsca* (Dark Sedge), found only on an island in Lough Neagh, is a creeping species, with *stems* 1—2 feet high; *leaves* narrow, flat, with reddish-brown sheaths with filamentous edges; *spikelets* 3 or 4, oblong, in a loose spike; *glumes* dark brown, with a green keel prolonged into a point; *styles* 3-cleft; *fruit* flattened, glaucous green.—Fl. June—August. Perennial.

29. *C. Hudsónii* (Tufted Bog Sedge).—A densely tufted species; *stems* 1—3 feet high, slender, stiff; *leaves* narrow, flaccid, with a webbing of filaments on the sheaths; *spikelets* 3 or 4, erect, cylindric, 1—2 in. long, sessile, *styles* 2-cleft; *fruits* oblong, in 6—9 rows, larger than the dark glumes.—Bogs; local.—Fl. May, June. Perennial.

30. *C. acúta* (Slender-spiked Sedge).—A tufted species, with or without runners ; *stems* 2—3 feet high, 3-angled ; *leaves* as long, broad, flaccid, their sheaths not webbed ; *spikelets* 4—9, 1—4 in. long, nodding ; *styles* 2-cleft ; *lower bract* long, leaf-like, with long auricles. —Wet places ; not uncommon.—Fl. June—August. Perennial.

CÁLEX GOODENÓWII (*Common Tufted Sedge*).

31. *C. trinérvis*. a low-growing species, less than

a foot high, with long, scaly *root-stocks* and runners; *stems* smooth, 3-angled; *leaves* narrow, smooth, involute; *spikelets* few, close together, ½—1 in. long; *lower bract* slender, stiff, longer than the spikelet; *fruit* compressed, brown, dotted.—Wet sandy places on the Norfolk coast.—Fl. July, August. Perennial.

32. *C. rígida* (Stiff Mountain Sedge).—A dwarf alpine form, scarcely 6 in. high, with short, flat, rigid *leaves* with revolute margins; *spikelets* 3—6, erect, short, dark; *fruit* obovoid, compressed, not veined,—Wet stony places on mountains in the north. —Fl. June—August. Perennial.

33. *C. aquátilis* (Water Sedge).—A tall, tufted form, with runners; *stems* 1—2 feet high, 3-angled, rigid, polished, leafy below; *leaves* long, erect, flat, involute; *spikelets* 3—6, cylindric, slender, 1—2½ in. long; *fruit* rounded, compressed, not veined.—Scottish bogs; rare.—Fl. June—August. Perennial.

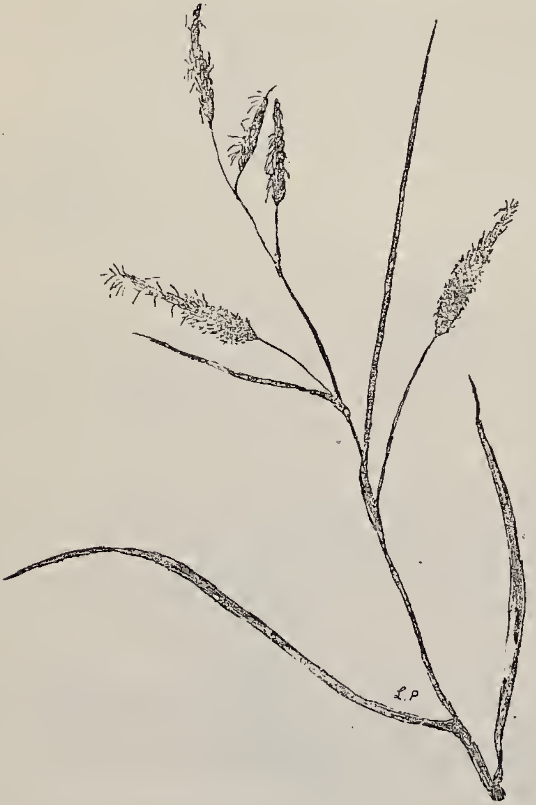
34. *C. salína*, var. *Kattegaténsis*, with erect, 3-angled *stem*, 12—18 in. high; *leaves* of the same length, with rough keels and margins; *bracts* leafy and longer than the spikelets; *staminate spikelets* 2—3, sessile; *pistillate* ones 3—4, on short stalks, dark brown, has been recorded from the sandy banks of the River Wick, Caithness.

35. *C. Goodenówii* (Common Tufted Sedge).—A tufted or creeping species; *stems* 1—2 feet high, stiff, slender, 3-angled, rough; *leaves* slender, narrow, erect, recurved; *spikelets* 3—5, erect, sub-sessile, not more than an inch long, near together; *bracts* with short auricles; *fruit* rounded, compressed, many-veined.—Marshes and wet meadows; common.—Fl. May—July. Perennial.

36. *C. flácca* (Glaucous Sedge).—A creeping species; *stems* few, wiry, a foot or more in height, 3-angled, smooth; *leaves* narrow, flat, glaucous; *staminate spikelets* 2 or 3; *pistillate spikelets* 4—6, sub-erect, cylindric, ½—1 in. long, long-stalked; *glumes* dark brown; *styles*

3-cleft; *fruit* ovoid, triangular, not beaked.—Damp places; common.—Fl. June, July. Perennial.

37. *C. magellánica.*—A slender, creeping species; *stems* a foot or more high, nearly smooth; *leaves* linear, flat, smooth-edged, not glaucous; *pistillate spikelets* 2 or 3, long-stalked, drooping; *bracts* leafy, broad, flat; *glumes* purple, lanceolate, with long points; *fruit* roundish, faintly ribbed, beaked.—Spongy bogs in the north; rare.—Fl. June. Perennial.



CÁREX FLÁCCA (*Glaucous Sedge*).

38. *C. limósa* (Mud Sedge —A closely allied, slender, creeping species; *stems* 3—12 in. high, rough; *leaves* narrow, glaucous, channelled; *staminate spikelet* ½—1 in. long; *pistillate spikelets* 1 or 2, on slender stalks, drooping, 6—8 lines long; *bracts* leafy; *glumes* rather dark brown with green mid-rib, ovate, upper ones pointed; *styles* 3-cleft; *fruit* rather large, roundish, compressed, not beaked.—Spongy bogs; rare.—Fl. June. Perennial.

39. *C. rariflóra* (Loose-flowered Alpine Sedge).—A creeping plant; *stems* 6—12 in. high, wiry, smooth; *leaves* narrow, erect, rough-edged; *staminate spikelet* short, sub-erect; *pistillate spikelets* 2 or 3, drooping, ⅓ in. long, on slender stalks of the same length, 6—8-flowered; *bracts* with short sheaths; *glumes* brown, shining, obtuse, with a minute point; *fruit* obovoid, faintly veined, shortly beaked.—Elevated bogs in Scottish Highlands.—Fl. June—August. Perennial.

40. *C. digitáta* (Fingered Sedge).—Densely tufted; *stems* slender, curved, 6—10 in. high, sheathed at the base, leafless; *leaves* radical, flat, shorter, revolute; *staminate spikelet* terminal, 6 lines long; *pistillate spikelets* close together, 2 or 3, shortly stalked, spreading in a finger-like manner; *flowers* lax; *bracts* brown and sheathing; *styles* 3-cleft; *fruit* obovoid, and minutely downy.—Woods on limestone; rare.—Fl. April, May. Perennial.

41. *C. ornithópoda* (Bird's-foot Sedge), a closely allied form, with broader *bracts* and longer *fruit*, occurs in Derbyshire and Yorkshire.—Fl. May—July. Perennial.

42. *C. húmilis* (Dwarf Silvery Sedge).—A creeping, tufted species; *stems* 1—5 in. high; *leaves* longer, stiff, involute, curved; *staminate spikelet* terminal, about 9 lines long; *pistillate ones* 3—5, much smaller, stalked, placed at intervals on the stem, scarcely protruding from the sheath of silvery membranous *bracts*; *glumes* with membranous edges; *styles* long, 3-cleft;

fruit ovoid, obtuse, ribbed, slightly downy.—Limestone hills in the south-west; rare.—Fl. May, June. Perennial.

43. *C. montána* (Mountain Sedge).—A creeping, tufted species, with slender *stems*, 6—18 in. high, narrow *leaves*; *spikelets* few, sessile, crowded, bright red-brown, polished; *fruit* obovoid, hairy, longer than the glumes, with a short, notched beak.—Heaths and woods in the south.—Fl. April, May. Perennial.

CÁREX PILULÍFERA (*Round-headed Sedge*).

44. *C. pilulífera* (Round-headed Sedge).—Tufted, with few slender *stems*, 6—12 in. high, 3-angled, rough; *leaves* shorter, broad, weak, and flexible; *pistillate spikelets* 2 or 3, globose, sessile, close under the terminal staminate one; *bracts* short, leafy; *glumes* brown, broadly ovate, pointed; *styles* 3-cleft; *fruit* small, nearly globular, shortly beaked.—Wet heaths; common.—Fl. May—July. Perennial.

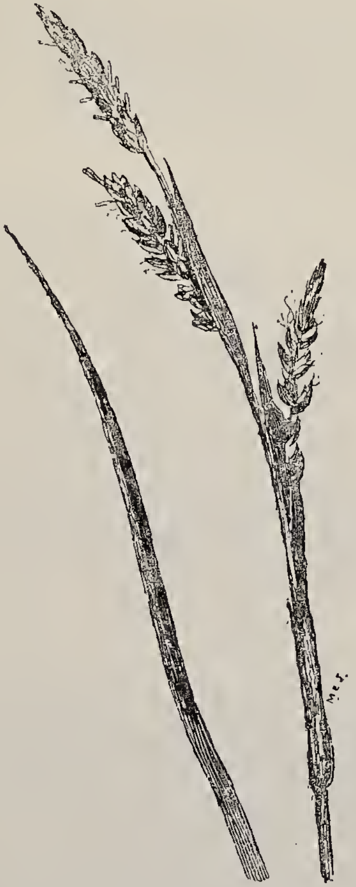
45. *C. ericetórum* (Heath Sedge).—A creeping, tufted plant; *stems* 2—6 in. high, stiff, curved, 3-angled, smooth; *leaves* recurved, keeled; *staminate spikelet* spindle-shaped, ½ in. long; *pistillate spikelets* 1—3, ovoid, sessile, small, close together, 6—10-flowered; *glumes* brown, with a broad pale edge, very blunt, ciliate, as long as the *fruit*.—Chalk banks in the eastern counties; rare.—Fl. April—June. Perennial.

46. *C. vérna* (Spring Sedge).—A small, creeping species with runners; *stem* 6—12 in. high, 3-angled; *leaves* short, keeled, curved, densely tufted; *staminate spikelet* slender, erect; *pistillate spikelets* 1—3, oblong, close together; *glumes* small, broad, with a distinct fine point, brown edges, and green midrib as long as the ovoid, 3-sided, shortly beaked and slightly downy *fruit*.—Dry pastures; common. — Fl. April, May. Perennial.

47. *C. tomentósa* (Downy-fruited Sedge), known only from Marston Maisey, Wiltshire. *Root-stock* creeping; *stem* slender, erect, 12—18 in. high; *leaves* narrow, erect, short; *staminate spikelet* terminal, about an inch long; *pistillate spikelets* 1 or 2, at some distance, oblong, erect, nearly sessile, ½ in. long, compact; *lower bracts* leafy; *glumes* small, brown; *styles* 3-cleft; *fruit* small, globose, with copious white down.—Wet meadows.—Fl. June, July. Perennial.

48. *C. palléscens* (Pale Sedge).—*Stems* tufted, without runners, leafy at the base, 1—2 feet high; *staminate spikelet* terminal, light brown, about 6 lines long;

pistillate spikelets 2 or 3, pale yellowish-green, shortly stalked, erect or slightly drooping, oblong, shorter than the staminate one and at short distances below it ; *bracts* leafy; *styles* 3-cleft ; *fruit* smooth, blunt.—Wet places ; common.—Fl. June, July. Perennial.



CÁREX PANÍCEA (*Carnation-grass*).

49. *C. panícea* (Carnation-grass).—A tufted, creep-

ing plant, with runners; *stems* 1—2 feet high, smooth, leafy; *leaves* rather short, erect, flat, glaucous, resembling those of the Carnation, but with rough edges; *spikelets* usually 3, the terminal one staminate, the others pistillate, distant, erect, stalked, ½—1 in. long; *flowers*, especially the lowest, some distance apart; *bracts* short, leafy, with sheaths; *glumes* brown; *styles* 3-cleft; *fruit* ovoid, triangular, smooth, shortly beaked.—Wet meadows; common.—Fl. June, July. Perennial.

50. *C. vagináta* (Short Brown-spiked Sedge).—A closely allied alpine species, but not glaucous, with broader, recurved *leaves;* shorter *bracts* with looser, funnel-shaped sheaths; looser *spikelets*; paler and more blunt *glumes;* and larger, more beaked *fruit.*—Scottish mountains.—Fl. July. Perennial.

51. *C. atrofúsca* (Dusky Sedge).—*Stem* 3—10 in. high; *leaves* very short, broad; *staminate spikelet* terminal; *pistillate spikelets* 2—4, ovoid, shortly stalked; *bracts* sheathing; *glumes* ovate, acute, dark purple, with a pale midrib; *fruit* dark purple, rough-edged, with a 2-fid beak.—Ben Lawers.—Fl. July. Perennial.

52. *C. frígida* (Cold Sedge).—A small, tufted, and slightly creeping species, 3—12 in. high, with slender *stems* bearing 1 or 2 leaves, and numerous long, flat, broad *radical leaves;* *spikelets* 4—6, spindle-shaped, rich dark brown, the terminal one staminate, the upper ones sessile, the lower long-stalked and becoming pendulous; *fruit* with a long, slender, ciliate, 2-fid beak.—Wet turf, Glen Callater, Aberdeenshire.—Fl. August. Perennial.

53. *C. capilláris* (Dwarf Capillary Sedge).—A tufted species; *stems* 3—9 in. high, slender, smooth, longer than the soft, recurved *leaves;* *staminate spikelet* terminal, small; *pistillate spikelets* 2 or 3, drooping, on long hair-like stalks, pale-coloured, loose, few-flowered, seldom 6 lines long; *lower bracts* enclosing

several peduncles; *glumes* ovate, obtuse, with membranous edges, as long as the beaked *fruit; styles* 3-cleft.—Mountains in the north; local.—Fl. June, July. Perennial.

54. *C. péndula* (Great Drooping Sedge).—A tufted species, without runners; *stems* stout, triangular, leafy, 3—6 feet high; *leaves* long, nearly ½ in. broad; *spikelets* 4—6 in. long, numerous, drooping; the stalks of the pistillate ones almost concealed in the sheaths of the long, leafy *bracts; glumes* ovate-lanceolate, brown, with green keel; *styles* 3-cleft; *fruit* small, ovoid, with short beak.—Wet woods; frequent.—Fl. May, June. Perennial.

55. *C. strigósa* (Loose-spiked Wood Sedge).—A tufted, creeping plant; *stems* 1—2 feet high, 3-angled, smooth, leafy; *leaves* short, broad, pale, flaccid; *spikelets* slender, drooping, 1—3 in. long, the lower pistillate ones on long stalks; *flowers* many, lax; *bracts* leafy, short, with long sheaths; *fruit* tapering at both ends, longer than the pointed, transparent *glumes.*—Thickets; rare.—Fl. May, June. Perennial.

56. *C. depauperáta* (Starved Wood Sedge).—Tufted; *stems* slender, 1—2 feet high, 3-angled, smooth, leafy; *leaves* long, narrow, flat; *staminate spikelet* slender, an inch or more long; *pistillate spikelets* 3—5, about ½ in. long, erect, green, 3—4-flowered, the lower on long stalks; *fruits* few, very large, globose, many-ribbed, with a long beak.—Dry woods in the south; very rare.—Fl. May, June. Perennial.

57. *C. sylvática* (Wood Sedge).—Tufted; *stems* weak, 1—3 feet high, leafy; *leaves* flaccid; *staminate spikelet* pale, about an inch long; *pistillate spikelets* distant, slender, an inch or more in length, on long stalks, loose-flowered; *bracts* leafy, with long sheaths; *glumes* green, narrow, pointed; *styles* 3-cleft; *fruit* elliptical, smooth, obscurely veined, tapering into a long beak.—Damp woods; common.—Fl. May, June. Perennial.

58. *C. lævigáta* (Smooth-stalked Sedge).—Tufted, creeping; *stems* smooth, 2—3 feet high; *leaves* short, broad, dotted beneath; *staminate spikelet* 1—2 in. long, 3-angled; *pistillate spikelets* distant, cylindric, 1—2 in. long, slender, green, stalked; *fruit* ovoid, tapering at both ends, ribbed, with a rough beak.—Wet places; not common.—Fl. June. Perennial.

CÁREX DÍSTANS (*Loose Sedge*).

59. *C. binérvis* (Green-ribbed Sedge).—A closely allied, but much smaller species, generally about a

foot high; *leaves* rigid, keeled, recurved; *pistillate spikelets* not more than an inch long, brownish; *fruit* with two prominent green ribs and a broad, smooth beak.—Heaths; common.—Fl. June, July. Perennial.

60. *C. dístans* (Loose Sedge).—Another closely allied species, less coarse; *leaves* glaucous; *spikelets* 4 or 5, far apart, the terminal one staminate, sometimes with a small one close to it, the others pistillate, ½—1 in. long, oblong, erect, stalked, but sometimes appearing sessile, the stalks being enclosed in the sheaths of the leafy *bracts; glumes* brownish; *styles* 3-cleft; *fruit* yellowish-brown, ovoid, smooth, faintly ribbed with a narrow, rough beak.—Brackish marshes near the sea. Fl. May, June. Perennial.

61. *C. dilúta* (Dotted-fruited Sedge).—Another nearly allied species, 12—18 in. high, slender; *glumes* pale red with a broad green band down the back; *fruit* ovoid, membranous, swollen, shining, only ribbed at the angles, dotted, longer than the glumes, with a slender, smooth beak.—Marshes near the sea.—Fl. June. Perennial.

62. *C. fúlva* (Tawny Sedge).—Another nearly allied species, with a rough-edged *stem*, 2 or 3 pale *pistillate spikelets*, which are ovate-oblong; *glumes* ovate, not mucronate, with transparent tips; *fruit* broadly ovoid, ribbed, with a rough beak.—Marshes, chiefly at high altitudes.—Fl. June. Perennial.

63. *C. exténsa* (Long-bracteate Sedge).—Tufted, rather slender, 8—18 in. high; *leaves* very narrow, stiff, erect, often convolute; *spikelets* nearly sessile, near together at top of stem, or only the lower one distant, oblong, brown-green; *bracts* long, narrow, leafy, with short sheaths, the lowest much longer than the stem; *glumes* mucronate; *styles* 3-cleft; *fruit* ovoid; triangular, strongly-ribbed, tapering into a conical beak.—A sea-coast plant, general round the British Isles.—Fl. June, July. Perennial.

64. *C. fláva* (Yellow Sedge).—Usually densely tufted and leafy, 3—18 in. high, acquiring frequently a yellowish hue, especially the pistillate spikelets; terminal *staminate spikelet* 6—9 lines long; *pistillate spikelets* 1, 2 or 3, sessile or shortly stalked, and very near the terminal one, and often one much lower down on a longer stalk, all erect, ovoid, and when ripe nearly globular; *bracts* all leafy and sheathing; styles 3-cleft; *fruit* ovoid, ribbed, beaked, spreading.—Wet places; frequent.—Fl. May, June.

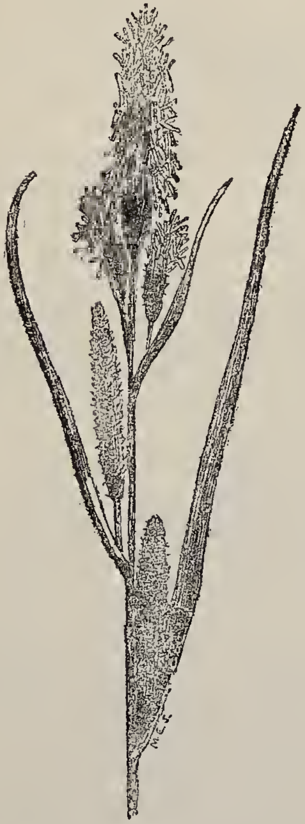
65. *C. filifórmis* (Slender Sedge). — *Root-stock* creeping, with runners; *stems* 1—3 feet high; *leaves* very slender, stiff; *staminate spikelets* 2 or 3, slender, 1—2 in. long, brown; *pistillate spikelets* 1—3, remote from them, nearly sessile, oblong, 6—9 lines long, loose-flowered; *styles* 3-cleft; *fruit* ovoid, with a short 2-fid beak, very downy.—Peat-bogs; local.—Fl. May. Perennial.

66. *C. hírta* (Hairy Sedge or Hammersedge).—*Root-stock* creeping, jointed, scaly; *stems* weak, leafy, 1—2 feet high, and, as well as the *leaves*, more or less hairy; terminal *staminate spikelets* 1 or 2; *pistillate* ones 2 or 3, very distant, stalked, cylindric, an inch or more long; *bracts* with long sheaths; *fruit* tapering into a long, 2-fid beak, covered with short, spreading hairs.—Damp woods.—Fl. May, June. Perennial.

67. *C. Pseudo-cypérus* (Cyperus-like Sedge).—A stout, tufted form; *stems* 1—3 feet high, 3-angled, rough; *leaves* broad, long, rough; *staminate spikelet* 2—3 in. long, slender, pale; *pistillate spikelets* 4—5, not more than 2 in. long, cylindric, green, long-stalked, drooping when in fruit; *bracts* broad, long, and leafy, without sheaths; *glumes* narrow, pointed, rough, green; *styles* 3-cleft; *fruit* spreading, lanceolate, ribbed, with long, stiff, 2-fid beak. — River-banks; not common.—Fl. June. Perennial.

68. *C. acutifórmis* (Pond Sedge).—A tall, stout species, with a creeping *root-stock* and runners; *stems*

2—3 feet high, stout, 3-angled, rough; *leaves* erect, long, broad, glaucous; *staminate spikelets* 2 or 3, 1—2 in. long, sessile, dark brown, with blunt *glumes; pistillate spikelets* 2 or 3, rather distant, sessile, or the lowest shortly stalked, often 2 in. long, erect, cylindric, blunt, with pointed *glumes; bracts* leafy, without sheaths; *styles* 3-cleft; *fruit* ovate, slightly triangular, but much flattened, tapering into a very short, 2-fid



CÁREX ACUTIFÓRMIS (*Pond Sedge*).

beak. — Ditches; common.—Fl. May, June. Perennial.

69. *C. ripária* (Greater Pond Sedge).—A nearly allied, but much larger species, being by far the largest British Sedge; *stems* 2—5 feet high; *leaves* broader; *spikelets* more numerous and very large, 3—6 staminate, crowded, 1½—2 in. long, with acute *glumes*, 4—6 pistillate, pointed; *fruit* oblong-ovoid, convex on both sides.—Ditches; common.—Fl. May, Perennial.

70. *C. rostráta* (Bottle Sedge).—A stout, tufted and creeping species, with *stems* 1—2 feet high, smooth, slightly 3-angled; *leaves* long, channelled, glaucous; *spikelets* 1—2 in. long or even more, 2—3 staminate, 2—4 pistillate, remote, erect, stout, cylindric, pale, the lowest shortly stalked; *bracts* leafy, without sheaths; *styles* 3-cleft; *fruit* flask-shaped, that is, ovoid, inflated, narrowing suddenly into a long slender beak.—Bogs; common.—Fl. May, June. Perennial.

71. *C. rhynchophýsa*, a taller and more glaucous, somewhat tufted plant, 2—3 feet high; *bracts* leaf-like, longer than the staminate spikelets; *spikelets* curved outwards at the base, 3—4 pistillate, 4—6 staminate, the pistillate ones 2—3 in. long, the staminate ones 1—2 in.; *styles* deeply 3-cleft; *fruit* globose, tapering into a rather long beak.—Found in 1892 by Mr. Lloyd Praeger in Mullaghmore Lough, co. Armagh.—Fl. July, August. Perennial.

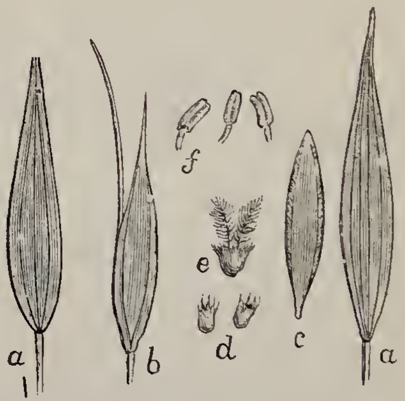
72. *C. vesicária* (Bladder Sedge).—Nearly allied to *C. rostráta*, but with rough, triangular *stems*; flat, green *leaves*; rather shorter *spikelets*; and *fruits*, although inflated, more conical, tapering gradually into a shorter subulate beak.—Bogs; less common than *C. rostráta*.—Fl. May, June. Perennial.

73. *C. púlla* (Russet Sedge).—An alpine form of the preceding; *root-stock* creeping, the scaly runners ending in tufts of leaves; *stems* 4—10 in. high, leafy; *spikelets* 3 or 4, distant, 1 or 2 staminate, the pistillate

ones ovoid, dark brown, 6—8 lines long, the lowest on a slender stalk, with a leafy bract at its base; *styles* 2-cleft; *fruit* ovoid, inflated, with a very short, 2-fid point.—Only found on the higher Scottish mountains. —Fl. May, June. Perennial.

Ord. XCI. Gramíneæ.—The Grass Family.

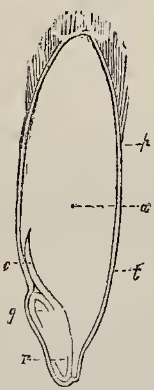
The grasses form one of the largest, most naturally defined, and most widely distributed Orders in the Vegetable Kingdom, and at the same time one which is unrivalled in its utility to man. It comprises about 3,600 species in 310 genera. They are evergreen, annual, or perennial herbs, though some of them reach a large size, Bamboos being sometimes 100 feet in height and nearly a foot in diameter. Many perennial grasses have *rhizomes* or grow in tufts. The *stem* is furnished with prominent *nodes* with long, generally hollow *internodes*, is circular in section, or 2-edged, and contains much siliceous matter, being often hard and polished externally. The Maize (*Zéa Mays*) and the Sugar-cane (*Sáccharum officinárum*) are exceptional in having solid stems. The *leaves* are alternate, simple, and usually linear, with no petiole, except in a few Bamboos, but with a long sheath embracing the stem, and split down the side opposite to that on which the blade is. At the junction of the sheath and blade there is generally a little membranous outgrowth, termed the *ligule*. The *flowers* are in *spikelets*, and these are variously arranged in spikes, racemes, or panicles. Each spikelet consists of 1—5 flowers, arranged alternately on a very short axis, or *rachilla*, but some of these flowers are often represented merely by glumes. At the base of the rachilla are usually two boat-shaped, green or purplish glumes with nothing in their axils. Within these are the flowers, each with two other glumes, the lower or outer of which is termed the *flowering glume*, the inner, which is generally of very delicate texture and has two green ribs, being termed the *pale*. Within these two glumes, and alternate with them, are found 2, or rarely 3, very minute scales, known as *lodicules*, but these are sometimes wanting. There is, in fact, a frequent suppression of certain parts of the floral envelope, glumes being often empty or sterile, and the whole spikelet, or *locusta*, sometimes consisting of only 1 glume and 1 pale. In many grasses one or more of the glumes bears a brittle-like point or *awn*, which is sometimes very long, and may either be terminal, proceeding from the point of the glume, as in Barley, or be inserted on its back or at its very base. Each flower has usually 3 *stamens* (rarely 1, 2 or 6), with long anthers, the lobes of which diverge at each end, and weak, hair-like filaments. The *ovary* is 1-chambered and 1-ovuled, and is crowned by 2 (rarely 1 or 3) *styles* with feathery *stigmas*, the pollen being generally carried by wind. The *fruit* or grain, technically known as a *caryopsis*, is entirely filled by the *seed*, so that their coats adhere; and the *embryo* lies to one side at the base of a mass of mealy or farinaceous albumen.



Spikelet of Wild Oat: *a*, outer glumes; *b*, flowering glume, with awn; *c*, pale; *d*, lodicules; *e*, ovary; *f*, stamens.

Grasses are abundant everywhere on land, and there are species inhabiting fresh water; but there are no marine forms. In the tropics they acquire a much greater height than in colder regions; but the compact grassy turf, which is such a charm of our English scenery, is almost entirely wanting in the Torrid Zone, those species which have the "social" habit being mainly characteristic, in fact, of the colder parts of the Temperate Zone.

The cereal grasses, Wheat (*Tríticum æstívum* and *T. hybérnum*), Oats (*Avéna satíva*), Barley (*Hórdeum dístichum* and *H. hexástichum*), Rye (*Secálé cereálé*), Maize (*Zéa Mays*), Rice (*Orýza satíva*), and various Millets, cultivated for the sake of their grain, are the most valuable members of the Order to mankind; while the value of grasses as fodder for cattle is hardly second to that of their corn for human food.



Section of the fruit of the Oat: *p*, pericarp, or wall of the ovary; *t*, seed-coats; *a*, albumen; *c*, cotyledon; *g*, plumule; *r*, radicle.

Among the most esteemed fodder grasses are Rye-grass (*Lólium perénné*) and its variety, Italian Rye-grass (*Lólium perénné* var. *itálicum*), especially for hay; Cock's-foot grass (*Dáctylis glomeráta*) and Timothy-grass (*Phléum praténsé*), especially for heavy or peaty land; the sweet-scented Vernal-grass (*Anthoxánthum odorátum*) which gives much of its delicious fragrance to new-mown hay; *Póa praténsis* for dry, sandy soils; *P. nemorális* var. *sempervírens* and *P. triviális* for permanent pasture; and the Fescues (*Festúca duriúscula* and *F. elátior*) also for permanent pasture, and *F. rúbra* for sandy soils. Cattle are very fond also of the Tussack-grass (*Dáctylis cæspitósa*) of the Falkland Islands, which has been introduced in the Hebrides.

Sugar is a general product of grasses, and can be easily tasted in spring if we chew the stem of almost any meadow grass. It is, however, chiefly manufactured from the stems of the Sugar-cane (*Sáccharum officinárum*, a native of South-Eastern Asia, now cultivated throughout the tropics; and, to a much smaller extent, from those of the Guinea Corn (*Sórghum saccharátum*). In eastern countries the Bamboos are used for numberless purposes—houses, furniture, cordage, and even sails of ships being made from it. Alfa or Esparto-grass (*Macrochlóa tenacíssima*), a native of Northern Africa, is a valuable material for paper-making; and various Indian species of *Andrópogon* yield aromatic "Grass Oils," such as Vetivert, Lemon-grass, or Verbena, Citronella, and Geranium or Ginger-grass, which are largely used in perfumery.

The classification of grasses is a matter of great difficulty; but the British species fall under eight tribes, which may be grouped in two Sub-orders.

Sub-order I. Panicaceæ.—Spikelets jointed upon the pedicel; rachilla persistent; glumes 1—4, *only the uppermost enclosing a perfect flower.*

Tribe 1. *Paníceæ.—Flowering glume* 3- *or more-nerved, not awned.*

1. Pánicum.—*Glumes* 4; *pedicels* of spikelets naked or hairy.

2. SETÁRIA.—*Glumes* 4; *pedicels* of spikelets bristly.

3. SPARTÍNA.—*Glumes* 3; *spikes* upright, in a raceme.

Tribe 2. *Orýzeæ.—Spikelets laterally compressed; flowering glume and pale* 1-*nerved.*

4. HOMALOCÉNCHRUS.—*Spikelets* in a loose panicle; *empty glumes* absent.

Sub-order II. Poáceæ.—Spikelets rarely jointed upon the pedicel; rachilla deciduous; glumes 3 *or more, the two lowest empty.*

Tribe 3. *Phalarídeæ.—Spikelets distinctly stalked, laterally compressed; rachilla not produced beyond the uppermost glume; glumes* 3—6, *uppermost only with a perfect flower; pale absent or* 1-*nerved.*

5. PHÁLARIS.—*Glumes* 6, awnless; *stamens* 3.

6. ANTHOXÁNTHUM.—*Glumes* 6, 2-awned; *stamens* 2.

7. HIEROCHLÓË.—*Glumes* 6, 2-awned, with 3 *stamens* each; uppermost perfect flower with 2.

8. ALOPECÚRUS.—*Spikelets* jointed on the pedicel in a spike-like panicle; *glumes* 3 or 4; *flowering glume* with dorsal awn; *stamens* 3.

Tribe 4. *Agrostídeæ.—Spikelet* 1-*flowered; glumes* 3; *flower perfect; pale* 2-*nerved.*

* *Rachilla not produced beyond flowering glume.*

9. MÍLIUM.—*Panicle* loose; *flowering glume* hardening round fruit; no awn.

10. PHLÉUM.—*Panicle* dense, cylindric, spike-like; *flowering glume* enclosing the fruit.

11. MIBÓRA.—*Spikelets* in a 1-sided raceme, dorsally compressed, awnless.

12. AGRÓSTIS.—*Panicle* loose; *spikelets* very small; *flowering glume* transparent.

13. POLYPÓGON.—*Panicle* spike-like; *glumes* awned.

14. Calamagróstis.—*Rachilla* with long, silky hairs; *flowering glume* awned.

** *Rachilla produced beyond flowering glume.*

15. Gastrìdium.—*Panicle* spike-like; *outer glumes* awnless; *flowering glume* minute, 4-toothed.

16. Apera.—*Panicle* loose; *flowering glume* slightly 2-fid, with a long, slender awn.

17. Deyeúxia.—*Rachilla* hairy; *flowering glume* awned.

18. Ammóphila. — *Panicle* spike-like; *spikelets* large; *rachilla* long, silky; *flowering glume* minutely awned.

19. Lagúrus.—*Panicle* spike-like, ovate; *outer glumes* ending in a long, fringed bristle; *flowering glume* 3-awned.

Tribe 5. *Avéneæ.—Spikelets in panicles, 2—4-flowered; rachilla generally produced beyond the flowering glume; glumes 4 or more, 2 lowest empty, equalling or overtopping the flowers; flowering glumes with twisted dorsal awns.*

20. Aíra.—*Panicle* loose; *rachilla* not produced; *awn* bent; *fruit* adnate to the flowering glume.

21. Weingærtnéria.—*Flowers* 2, perfect; *awn* jointed in the middle, with a club-shaped tip.

22. Descházmpsia.—*Flowers* 2; *awn* straight or twisted; *fruit* not adnate to the flowering glume.

23. Hólcus.—*Flowers* 2, lower perfect, awnless, upper staminate, awned.

24. Trisétum.—*Flowers* 2—6; *flowering glume* with 2 acute teeth and a bent, twisted dorsal *awn*; *ovary* smooth.

25. Avéna.—*Flowers* 2 or more; *flowering glume* with 2 points and a bent, twisted, terminal *awn*; *ovary* hairy.

26. Arrhenátherum.—*Flowers* 2, lower staminate, with long, basal, bent, twisted *awn*, upper perfect awnless, or with short, straight awn.

Tribe 6. *Chlorídeæ.—Spikelets in 2 rows on a flattened rachis, forming a 1-sided spike or raceme, laterally compressed, 1-flowered.*

27. Fibíchia.—*Spikes* spreading, digitate; *glumes* awnless.

Tribe 7. *Festúceæ.—Rachilla usually produced; glumes 6 or more, the 2 lowest empty; awn terminal or absent.*

28. Sieglíngia.—*Spikelets* seldom more than 5 or 6, in a racemose panicle, awnless, 2—4-flowered; *flowering glume* with 3 minute teeth at the top.
29. Phragmítes.—*Spikelets* in a spreading panicle, 1—6-flowered, awnless; *rachilla* bearded with long, silky hairs.
30. Sesléria.—*Spikelets* in an ovoid, spike-like panicle, awnless, with a soft ciliate glume below each.
31. Cynosúrus.—*Spikelets* in a 1-sided, spike-like panicle, 2—5-flowered, with bristly comb-like glumes below them.
32. Koeléria.—*Spikelets* in a sub-cylindric spike, 2—5-flowered; *flowering glume* membranous, keeled, pointed.
33. Molínia.—*Spikelets* in a narrow but loose panicle, lanceolate, 1—3-flowered; *glumes* hardening on the fruit.
34. Catabrósa.—*Spikelets* in a spreading panicle, with whorled branches, 1—3-flowered; *empty glumes* very unequal, blunt; *flowering glume* truncate at the top.
35. Mélica.—*Spikelets* in a slender panicle, ovate, awnless, 1—2-flowered; *upper glumes* forming a club-like rudiment.
36. Dáctylis. — *Spikelets* 3—5-flowered, densely crowded in a 1-sided panicle; *flowering glume* shortly awned.
37. Bríza.—Spikelets panicled, pendulous, short,

flat, densely and distichously imbricate, 3- or more-flowered; *glumes* membranous, boat-shaped, blunt.

38. Póa.—*Spikelets* panicled, awnless, 2- or more-flowered; *glumes* acute, unequal; *flowering glume* keeled, 3—5-veined.

39. Glycéria.—*Spikelets* panicled, awnless, many-flowered; *glumes* obtuse; *flowering glume* sub-cylindric, 3—9-ribbed, obtuse.

40. Festúca.—*Leaf-sheath* split to base; *spikelets* in a panicle or spike, 3- or more-flowered; *flowering glume* rounded at the back, 3—5-ribbed, pointed or awned; *styles* at the top of the smooth ovary.

41. Brómus.—*Leaf-sheath* split half-way; *spikelets* panicled, many-flowered; *flowering glume* rounded at the back, with a long, dorsal awn; *styles* below the hairy top of the *ovary*.

42. Brachypódium. — *Spikelets* in a spike or raceme, long, many-flowered; *rachis* not indented; *glumes* unequal; *flowering glume* with terminal awn; *ovary* hairy at the top.

Tribe 8. *Hordéæ.—Spikelets in 2 or more rows, sessile in the notches of a simple rachis, forming a spike; rachilla generally produced.*

43. Lólium.—*Spikelets* solitary in the notches, with their edges to the rachis, 3- or more-flowered.

44. Agropýron.—*Spikelets* solitary in the notches, with their broad sides to the rachis, 3- or more-flowered.

45. Leptúrus.—*Spikelets* solitary in the notches, with their broad sides to the rachis, 1-flowered.

46. Nárdus.—*Spikelets* solitary in the notches of a 1-sided spike, 1-flowered.

47. Hórdeum. — *Spikelets* 3 in each notch, 1-flowered, with long awns.

48. Élymus.—*Spikelets* 2 or 3 in each notch, 2—7-flowered, awnless.

1. Pánicum (Panic).—*Spikelets* 1-flowered, arranged 2 together along one side of linear, digitate spikes, or in a simple panicle; *glumes* 4, usually not awned, the lowest small; *flowering glume* veined. (Name, the Classical name for a kind of millet, connected with *panis*, bread.)

1.* *P. sanguinálé* (Fingered Panic).—An introduced weed of cultivated ground; *stems* 1—2 feet long, spreading at base, then erect; *leaves* flat, hairy; *panicle* of 2—6, rarely more, simple, slender, digitate, spike-like branches, 2—4 in. long.—South of England.—Fl. August. Annual.

2. *P. glábrum* (Red Millet, Finger-grass).—Very like the preceding, but much smaller and less hairy; *stems* 6—8 in., prostrate; *panicle* of 2—5 branches; *spikelets* minute, purplish, ovate, stalked, in pairs.—Sandy fields in the south-eastern counties; rare.—Fl. July, August. Annual.

3.* *P. Crus-gálli* (Loose, or Cockspur, Panic).—A coarse naturalised weed; *stems* 1—4 feet, ascending; *leaves* broad, glabrous, rough-edged; *panicle* 3—6 in. long, irregularly pyramidal, with alternate or opposite, rather 1-sided branches and downy, 3-sided rachis; *spikelets* green, on hairy pedicels; third *glume* pointed or awned; *flowering glume* polished.—Fields in the south-eastern counties.—Fl. July. Annual.

2. Setária (Bristle-grass).—*Spikelets* in a dense, cylindric, spike-like panicle, resembling those of *Pánicum*, but with stout bristles on their pedicels and no awns. (Name from the Latin *seta*, a bristle.)

1.* *S. víridis* (Green Bristle-grass or Panic).—An erect plant, 1—2 feet high; *leaves* flat, rough on the edges; *panicle* green, 1—3 in. long, with downy, 3-edged, whorled branches; *bristles* purplish, $\frac{1}{4}$ in. long, with ascending teeth; *flowering glume* smooth.—A casual in cultivated fields.—Fl. July, August. Annual.

2.* *S. glaúca* (Glaucous Bristle-grass).—A very similar plant; *panicle* 1—1¾ in. long; *flowering glume* transversely wrinkled.—A cornfield casual, Weybridge, Surrey.—Fl. September. Annual.

3.* *S. verticilláta* (Rough Bristle-grass or Panic).—Another very similar species; but with a narrower, rather loose *panicle;* downward pointing barbs to the *bristles;* and a smooth *flowering glume.*—Cultivated fields near London and Norwich.—Fl. July, August. Annual.

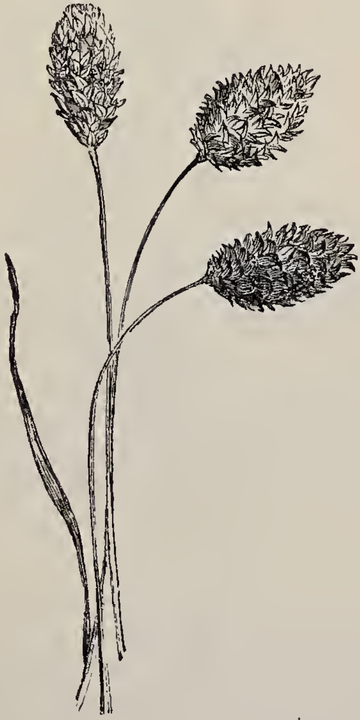
3. Spartína (Cord-grass).—Spikelets 1-flowered, ½ in. long, laterally compressed, sessile in 2 rows along one side of the erect, spike-like branches of a raceme; *glumes* 3, lowest smaller, second 5-nerved; *flowering glume* shorter, 1-nerved, awnless; *styles* long, united half-way up. (Name from the Greek *spartíné,* a cord, from a use to which the leaves have been put.)

1. *S. stricta* (Common Cord-grass).—A remarkably stiff, erect grass, with a long, branched, creeping *rootstock; stems* 1—2 feet, stout, polished, leafy; *leaves* erect, leathery, pointed, glaucous above, with blades jointed to their sheaths; *spikes* 2 or 3, adpressed, 1—3 in. long; *outer glume* 1-nerved, hairy; *rachis* scarcely extending beyond the last spikelet.—Muddy salt marshes in the south; local. It is cut at Southampton by the poorer classes for thatching.—Fl. July—September. Perennial.

2. *S. alterniflóra* (Many-spiked Cord-grass).—A larger species, 2—3 feet high; *leaves* with blades not jointed to the sheaths; *spikes* 3—8; *outer glume* 5-nerved, glabrous except on its keel; *rachis* produced beyond the last spikelet.—Mud flats, Southampton.—Fl. August. Perennial.

3. *S. Townséndi,* a still larger form, with shorter *leaves;* broader, larger *spikelets;* more lanceolate, downy *glumes;* and a flexuous tip to the rachis. Also occurs on Southampton Water and in the Isle of Wight.

4. Homalocénchrus (Cut grass), of which *H. oryzöïdes* is the only British species, has a smooth, shining *stem*, 2—3 feet high, leafy and hairy at the nodes; broad, rough, glaucous *leaves* with a truncate, torn ligule; *panicle* few-flowered, very loose, with slender, wavy branches, mostly enclosed in the leaf-sheath; *spikelets* shortly stalked, laterally compressed, consisting of only 2 parchment-like glumes.—Wet places, Surrey, Sussex, and Hants. (Name from the Greek *homalos*, even, *kenchros*, millet).—Fl. August—October. Perennial.



PHÁLARIS CANARIÉNSIS (*Canary-grass*).

5. PHÁLARIS (Reed-grass).—*Spikelets* 1-flowered, much compressed laterally, in panicles, awnless; *glumes* boat-shaped, keeled, membranous, nearly equal; *flowering glume* and *pale* leathery, closely investing the fruit. (Name from the Greek *phalos*, white, applied by Dioscorides to some plant with shining fruit.)

PHÁLARIS ARUNDINÁCEA (*Reed-grass*).

1.* *P. canariénsis* (Canary-grass).—An erect, leafy plant, 2—3 feet high, glaucous; *spikelets* densely crowded into an ovoid panicle, 1—1½ in. long; *glumes* very flat, acute, but not awned, winged on the keel, pale yellow, with a broad green line down each side.—A casual escape. Much cultivated as canary-seed in central and southern Europe.—Fl. June—August. Annual.

2.* *P. paradóxa*, a branched plant, 1—3 feet high, with a spike-like *panicle*, and *glumes* with a toothed wing on the keel and many-veined, has occurred, probably only casually, at Swanage, Dorset.—Fl. July. Annual.

3. *P. arundinácea* (Reed-grass). — A glabrous plant, with creeping *root-stock; stems* 2—6 feet high; *leaves* with large ligules; *panicle* erect, with spreading branches; *outer glumes* lanceolate, keeled, but not winged or awned, whitish with 3 green nerves.—On river banks and in marshes, especially on sand; common.—Fl. July, August. Perennial.

6. ANTHOXÁNTHUM (Vernal-grass).—Sweet-scented plants with stalked *spikelets* in a spike-like panicle; *lowest glume* 1-nerved, 2nd larger, 3-nerved, 3rd and 4th shorter, bifid, with dorsal awns; *flowering glume* blunt, 5—7-nerved; *stamens* 2. (Name from the Greek *anthos*, flower, and *xanthos*, yellow.)

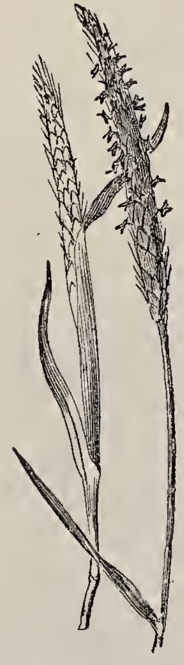
1. *A. odorátum* (Sweet Vernal-grass). — Erect, shining, 6—18 in. high; *leaves* hairy; *panicle* oblong, spike-like, interrupted below, 1—5 in. long; *anthers* purple in meadow form, yellow in woods.—Pastures, abundant, containing the aromatic principle *coumarin*, which exists also in Woodruff, Melilot, and Tonka-bean, and imparts its sweet scent to new-made hay.—Fl. May—July. Perennial.

2.* *A. Puélii*, a smaller species, with many slender much-branched *stems;* lax *panicles;* long, slender *awns;* and a fainter perfume.—Occurs occasionally as a modern introduction in sandy fields.—Fl. July—September. Annual.

7. Hierochloé (Holy-grass), of which *H. boreális* (Northern Holy-grass) is the only British species, is a fragrant grass, about a foot high, glabrous, with creeping *root-stock;* tufted *stems;* long *ligules;* a spreading *panicle* of small, brown, shining, ovate, 3-flowered *spikelets; flowering glume* with short awn; the two *lower flowers* with 3 *stamens,* the uppermost perfect, with 2 stamens.—Wet banks, Caithness. (Name from the Greek *híeros,* holy, *chloë* grass, it having been used to strew on church floors.)

ANTHOXÁNTHUM ODORÁTUM (*Sweet Vernal-grass*).

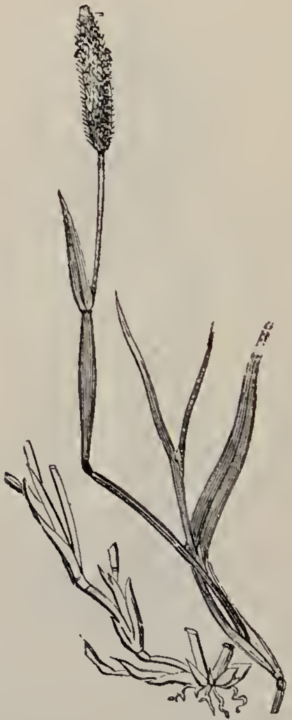
8. ALOPECÚRUS (Foxtail-grass).—*Spikelets* much compressed laterally, 1-flowered, densely crowded into a cylindric, spike-like panicle; *outer glumes* nearly equal, often connate below, awnless; *flowering glume* with a slender, bent, dorsal awn. (Name from the Greek *alópex*, fox, *oura*, tail.)



ALOPECÚRUS MYOSUROÏDES (*Slender Foxtail-grass*).

1. *A. myosuróïdes* (Black-grass, Slender Foxtail). —*Stem* erect, rough, 1—2 feet high; *leaves* with a large, blunt ligule; *spike* 2—3 in. long, slender, flexuous, more pointed than in the other species; *glumes* acute, united to about the middle, nearly smooth.—A troublesome weed in England.—Fl. April —November. Annual.

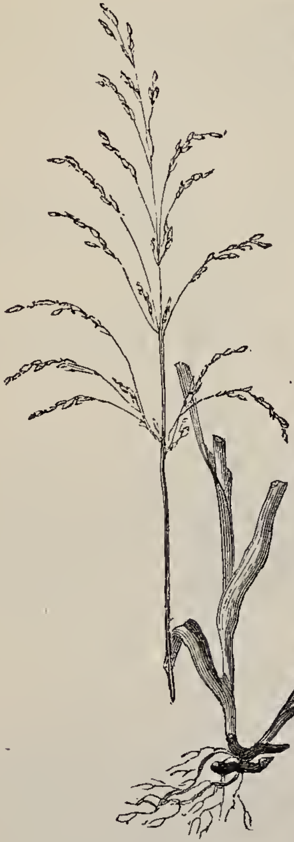
2. *A. fúlvus* (Orange-spiked Foxtail).—A glaucous plant; *stem* ascending, bent at the nodes, 1—2 feet high; *leaf-sheaths* rather inflated; *ligule* oblong; *spike* 2—3 in. long, pale; *glumes* united below, ciliate; *anthers* short, broad, at first white, then orange.—Ditches in the midland and southern counties; rare.—Fl. June—September. Perennial.



ALOPECÚRUS GENICULÁTUS (*Floating Foxtail*).

3. *A. geniculátus* (Marsh or Floating Foxtail).—A closely allied, not glaucous species; *leaf-sheaths* cylindric; *spike* 1—2 in. long, blunt; *glumes* connate, blunt, ciliate; *flowering glume* with a sub-basal awn,

half as long again as the glume; *anthers* linear, violet-yellow.—Wet places; common.—Fl. April—August. Perennial.



MÍLIUM EFFÚSUM (*Spreading Millet-grass*).

4. *A. bulbósus* (Tuberous Foxtail).—A tufted, not glaucous, form with the lower part of the ascending stem forming ovate tubercles; upper *leaf-sheath* inflated; *spike* 1 in. long, pointed; *glumes* not connate

acute, downy; *flowering glume* with sub-basal awn twice as long as the glume.—Salt marshes; rare.—Fl. May—July. Perennial.

5. *A. praténsis* (Meadow Foxtail).—*Stem* 1—2 feet high, erect, smooth, with runners; *sheaths* of upper leaves rather loose; *spike* 1—3 in. long, blunt, soft, pale green; *glumes* acute, scarcely united at the base, hairy; *awn* twice as long as the *flowering glume; anthers* yellow.—Rich pastures; common.—Fl. April —June. Perennial.

6. *A. alpínus* (Alpine Foxtail).—An allied, but usually shorter species, with looser *sheaths* to the upper leaves; *spike* seldom more than an inch long, unless cultivated, and softly silky with the rather long hairs which cover the acute, connate *glumes.*—By streams on lofty Scottish mountains.—Fl. July, August. Perennial.

9. Mílium (Millet-grass), of which *M. effúsum* (Spreading Millet-grass) is the only British species, is a slender, erect, smooth grass, 1—4 feet high; with broad, flat, thin *leaves; panicle* long, loose, spreading, and slender, its branches whorled; *spikelets* small, pale green, or purple, awnless; *flowering glume* smooth, white, hardening round fruit.—Damp woods; common. (Name in Latin meaning millet.)

10. Phléum (Cat's-tail grass).—*Panicle* dense, cylindric, spike-like, of compressed, 1-flowered *spikelets; flowering glume* awnless, or shortly awned, enclosing the fruit. Resembling the Foxtails, but distinguished from them by the possession of a *pale.* (Name from the Greek *phleós*, some reed-like plant.)

1. *P. alpínum* (Mountain Cat's-tail).—*Stem* solitary, ascending, 6—18 in. high; *leaf-sheaths* inflated; *ligule* short; *spike* oblong, purplish, about an inch

long; *glumes* truncate, with bristly awns as long as the glumes.—By streams on lofty Scottish mountains; rare.—Fl. July. Perennial.

2. *P. praténsé* (Timothy-grass, Meadow Cat's-tail).—*Stem* tufted, ascending, smooth, 1—3 feet high; *leaf-sheaths* not inflated; *ligule* long; *spike* cylindric, obtuse, 1—6 in. long, green; *glumes* truncate, with bristly awns, not half as long as the glumes; *anthers* yellow or purple.—Meadows; common. (Named after Timothy Hanson who cultivated it in North America.)—Fl. June—August. Perennial.

PHLÉUM PRATÉNSÉ (*Meadow Cat's-tail*).

3. *P. phalaroïdes* (Purple-stalked Cat's-tail).—Erect, like the Timothy-grass, but usually smaller; *outer glumes* linear-lanceolate, tapering into a minute, stiff point; margins white; *anthers* linear-oblong.—

Dry fields in the eastern counties; rare.—Fl. July. Perennial.

4. *P. arenárium* (Sea Cat's-tail).—Erect, 2—12 in. high; *leaves* broad, with long ligules, the upper ones with inflated sheaths; *spike* ¾—1 in. long, cylindric, tapering at the base, glaucous; *glumes* lanceolate, tapering into a short point; *anthers* minute, yellow.—Sandy coasts; frequent.—Fl. May—July. Annual.

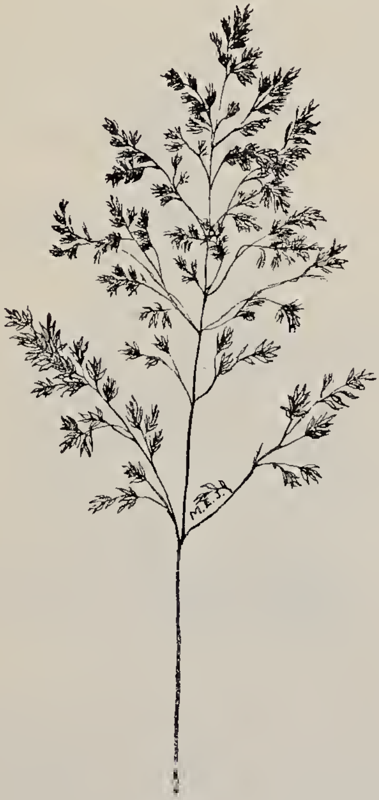
11. MIBÓRA, of which *M. vérna* (Early Sand-grass) is the only species, is a little tufted plant, 2—4 in. high; *leaves* short, bristly, rough, with white, inflated sheaths; *spikelets* 5—10, minute, sub-sessile, purplish, awnless, dorsally compressed, in a 1-sided spike, ½—1 in. long; *flowering glume* thin, very hairy, truncate, jagged at top.—Wet sandy shores of Anglesea and the Channel Islands; rare.—Fl. March, April. Annual.

12. AGRÓSTIS (Bent).—A large genus having numerous small, 1-flowered *spikelets* in an elegant panicle, with whorled branches; *outer glumes* boat-shaped, unequal, pointed, awnless; *flowering glume* shorter, transparent, with a short, slender, dorsal awn, or awnless. (Name, the Greek name for some kind of grass.)

1. *A. setácea* (Bristle-leaved Bent).—*Stems* erect, rough, about a foot high; *leaves* numerous, mostly radical, densely tufted, finely subulate, involute, rough; *panicle* close, oblong, with short branches; *glumes* acute, the lowest longer than the second; *flowering-glume* 4-ribbed, jagged at the top, with a fine, bent, and twisted basal awn.—Dry heaths in the south; rare.—June, July. Perennial.

2. *A. canína* (Brown Bent).—*Stems* ascending, 1—2 feet high, smooth, sometimes with runners; *leaves* narrow, flat, smooth; *panicle* with long, slender

branches, spreading when in flower, purplish or green; *glumes* acute, the lowest longer than the second; *flowering glume* 5-ribbed, jagged, with dorsal awn from below the middle.—Peaty heaths; common.—Fl. July, August. Perennial.



AGRÓSTIS PALÚSTRIS (*Fiorin-grass, Marsh Bent*).

3. *A. palústris* (Fiorin-grass or Marsh Bent.)—An elegant but most variable grass, nearly allied to the preceding; *stems* more or less prostrate below, often with long runners, 6—24 in. high, rough; *leaves*

with roughish sheaths and long, acute ligules; *panicle* spreading in flower, afterwards close; *glumes* nearly equal; *flowering glume* seldom awned.—Pastures; common.—Fl. July—September. Perennial.

4. *A. vulgáris* (Fine Bent).—A closely allied, very variable, but generally smaller species, with smooth *stems* and *leaf-sheaths*, short, truncate *ligules; panicle* spreading both in flower and fruit.—Pastures; common.—Fl. June—September. Perennial.

13. Polypógon (Beard-grass).—*Spikelets* 1-flowered, densely crowded in a spike-like, cylindric, or branched panicle; *glumes* notched, with awns 2 or 4 times as long as the glumes, from below their tips; *flowering glume* shorter and more shortly awned. (Name from the Greek *polús*, many, *pógón*, beard, from the long awns.)

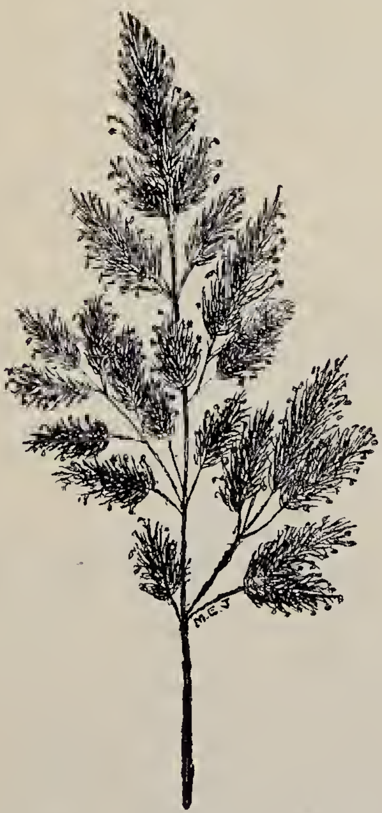
1. *P. monspeliénsis* (Annual Beard-grass).—A very beautiful species, procumbent at base, or rarely erect, 1—1½ foot high; *stems* stout, smooth; *leaves* large, broad, rough; *panicle* 1—6 in. long, dense, lobed, of a yellowish, shining green, silky; *glumes* blunt, less than half as long as the awns; *flowering glume* awnless.—Damp pastures in the south-eastern counties; rare.—Fl. June—August. Annual.

2. *P. littorális* (Perennial Beard-grass). — Nearly allied, variable in size, sometimes several feet in height; *panicle* smaller, more branched, purplish; *glumes* longer, tapering into an awn scarcely longer than the glume itself.—Salt marshes on the south-east coast; rare.—Fl. July, August. Perennial.

14. Calamagróstis (Small-reed). — Tall grasses with spreading, somewhat 1-sided *panicles* of 1-flowered *spikelets; flowering glume* awned, with a tuft of long, silky hairs on the rachilla at its base. Distinguished from the true reed (*Phragmítes*) by the

1-flowered spikelets. (Name from the Greek *kalamos*, reed, *agróstis*, grass.)

1. *C. epigéios* (Wood Small-reed).—*Stem* 3—5 feet high, stout, erect; *leaves* long, acuminate, rough, glaucous beneath; *panicle* branched, but not spreading except when in full flower, 4—12 in. long, with numerous crowded, purplish *spikelets; flowering glume* with very short and slender awn from about the



CALAMAGRÓSTIS EPIGÉIOS (*Wood Small-reed*).

middle.—In moist open places in woods; not generally common. One of the handsomest grasses.—Fl. June—August. Perennial.

2. *C. lanceoláta* (Purple Small-reed).—A tall grass, 2—4 feet high, resembling the preceding, but slender; *leaves* narrower and smoother; *panicle* looser, 5 or 6 in. long, drooping at the tip, shining purple; *flowering glume* notched with a very short terminal awn.—Wet places; rare.—Fl. June—August. Perennial.

15. Gastrídium (Nit-grass), of which *G. áustrálé* (Awned Nit-grass) is the only species, is an elegant, erect grass, 6—12 in. high, with rough-edged, flat *leaves* and a tapering spike-like *panicle* 2—3 in. long, pale green with silvery lustre, and is easily distinguished from other British grasses by the peculiar glossy, swollen base of the *outer glumes.*—Fields near the sea that are occasionally overflowed, in the south; rare. (Name from the Greek *gastrídion,* a swelling.) —Fl. June—October. Annual.

16. Apéra (Wind-grass).—Annual grasses with *panicles* of small, shining, 1-flowered *spikelets; outer glumes* 2, membranous, acute, awnless, the lower the smaller; *flowering glume* shorter, slightly 2-fid, with a long, slender, subterminal awn. (Name from the Greek, *apéros,* undivided.)

1. *A. Spíca-vénti* (Silky Wind-grass).—One of the handsomest of grasses, 2—3 feet high, with rather narrow, flat *leaves; panicle* 3 in. long, spreading, with very slender branches, and little shining *spikelets* hardly a line long; *awn* 3 or 4 times as long as the spikelet; *anthers* linear.—Sandy fields; rare.—Fl. June, July. Annual.

2. *A. interrúpta,* with a close *panicle,* the branches of which never spread, and short, oval *anthers,* occurs

rarely in the eastern counties.—Fl. June, July.—Annual.

17. Deyeúxia, a considerable genus of tall grasses, formerly classed with *Calamagróstis*, but differing in the *rachilla* being produced into a point tipped with hairs. (Name in honour of M. Deyeux, an eminent French chemist.)

AMMÓPHILA ARUNDINÁCEA (*Sea Marram*).

1. *D. strigósa*, found in 1885 by Robert Dick, the

baker naturalist of Thurso, in Caithness, has larger *spikelets* and more acuminate *glumes* than the following. It is a Northern type.

2. *D. neglécta* (Narrow Small-reed).—*Stem* erect, 1—3 feet high, slender, polished ; *leaves* short, stiff, with short ligules; *panicle* 2—6 in. long, narrow, erect, close, pale purplish, and green; *glumes* acute, longer than the hairs; *flowering glume* shorter, with awn inserted rather below the middle. — Bogs in Cheshire and Antrim; rare.—Fl. June, July. Perennial.

18. Ammóphila (Marram-grass).—*Panicle* spike-like; *spikelets* large, 1-flowered, much compressed laterally; *rachilla* long, silky; *glumes* sub-equal, awnless; *flowering glume* shorter, 5-nerved, with a minute sub-terminal awn. (Name from the Greek *ammos*, sand, *philo*, I love.)

1. *A. arundinácea* (Sea Marram, Murram, or Mat-grass, Sea-reed).—*Root-stock* creeping; *stems* erect, stiff, 2—4 feet high; *leaves* long, stiff, erect, glaucous above, polished below, with very long, torn ligules; *panicle* cylindric, straw coloured, 3—6 in. long, acute; *glumes* acute; *flowering glume* 3 times as long as the hairs.—Sand-dunes; frequent. Its value as a sand-binder cannot be overrated. At the end of the 18th century a large district near Moray Firth was destroyed by drifting sand owing to the wanton destruction of Marram.—Fl. July, August. Perennial.

2. *A. báltica*, distinguished by its looser, less cylindric *panicle;* lanceolate, acuminate *glumes;* and *flowering glume* twice as long as the hairs; occurs on Ross Links and Holy Isle, Northumberland.—Fl. July—September. Perennial.

19. Lagúrus (Hare's-tail grass), of which *L. ovátus* is the only species, is a very ornamental grass, with

numerous, stout, pubescent *stems* 6—12 in. high; short *leaves* hoary with soft down, with rather swollen *sheaths;* and *spikelets* closely crowded into an ovate, softly hairy, whitish head, 1—1½ in. long, the *glumes* being densely clothed with soft hairs.—Sandy places in Guernsey. (Name from the Greek *lagós*, hare, *oura*, tail).—Fl. June, July. Annual.

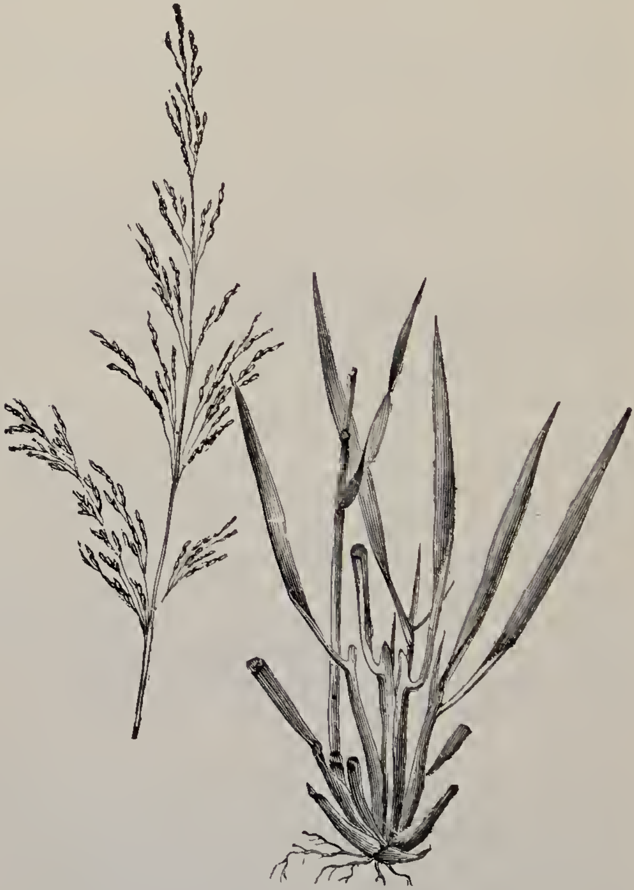
20. Aíra (Hair-grass).—*Spikelets* 2-flowered, laterally compressed, in a loose panicle; *glumes* nearly equal, not awned; *flowering glume* 2-fid, with a twisted dorsal awn from below the middle; *fruit* furrowed on the back, adnate to the flowering glume and pale. (Name, the Greek name for some grass.)

1. *A. caryophýllea* (Silver Hair-grass).—A tufted, slender, and graceful species; *stems* 2—12 in. high, bent below, rough, often purplish; *leaves* short, bristle-like, blunt, with rough sheaths; *panicle* 1—2 in. long, very spreading, with long, triply forked branches. —Dry places; common.—Fl. June, July. Annual.

2. *A. prǽcox* (Early Hair-grass).—A similar but smaller species, not more than 6 in. high, greener, with smooth *leaf-sheaths* and a close, oblong, spike-like *panicle*, ½—1 in. long, with short branches.—Dry places; common.—Fl. April, May. Annual.

21. Weingærtnéria, of which *W. canéscens* (Grey Hair-grass) is the only British species, is a tufted, slender species, less than a foot high, with numerous short, bristle-like, glaucous *leaves* with rough sheaths; *panicle* rather dense, 1—3 in. long, spreading in flower, with short branches; *spikelets* variegated with purple and white; *glumes* with slender, transparent tips; *flowering glume* shorter, with a bent, sub-basal awn, bearded at the joint, and thickening into a club-shaped tip; *anthers* purple; *fruit* grooved, adnate to the flowering glume and pale.—Sandy coasts of

Norfolk, Suffolk, and the Channel Islands.—Fl. June, July. Perennial.



DESCHÁMPSIA CÆSPITÓSA (*Tufted Hair-grass*).

22. DESCHÁMPSIA, a genus including many species formerly classed under *Aíra*, is distinguished by having the *rachilla* produced, the *flowering glume* truncate and jagged, and the *fruit* enclosed by, but not adnate

to, it and the pale. (Named in honour of M. Deschamps, an eminent French chemist.)

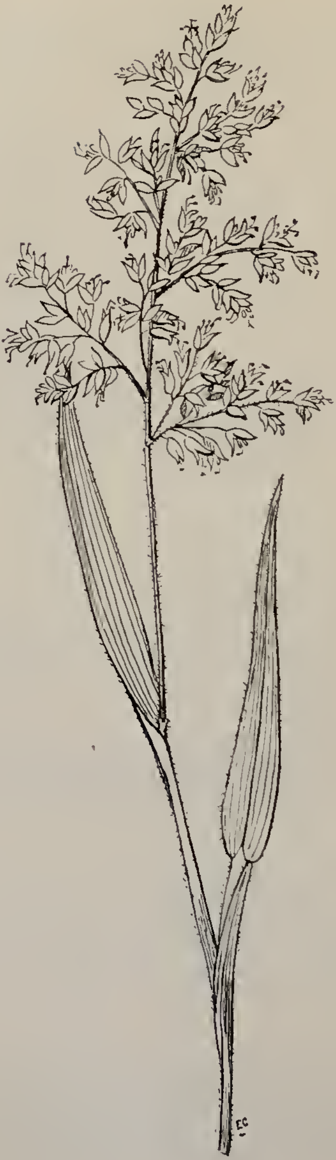
1. *D. cæspitósa* (Tufted Hair-grass).—Forming large dense tufts; *stems* 2—4 feet high; *leaves* flat and rough; *panicle* 6—8 in. long, very elegant, with slender, spreading, rough branches; *spikelets* $\frac{1}{4}$ in. long, much compressed, silver-grey or purplish, 2-flowered; *flowering glume* with a short, fine, hair-like, straight, sub-basal awn.—Moist places; abundant, indicating that pasture requires under-draining.—Fl. June—August. Perennial.

2. *D. alpína* (Alpine Hair-grass).—An allied but smaller species, 6—12 in. high, with channelled involute *leaves;* closer *panicle* with smooth branches; and a bent awn from above the middle of the *flowering glume.*—Wet rocks, Scotland and West of Ireland; rare.—Fl. June, July. Perennial.

3. *D. díscolor* (Bog Hair-grass).—*Stems* erect, slender, polished, about a foot high; *leaves* hair-like with linear-lanceolate ligules; *panicle* spreading, drooping at the end; *flowering glume* with bent, twisted, sub-basal awn; that of the upper flower on a stalk half its own length.—Wet peaty bogs.—Fl. July, August. Perennial.

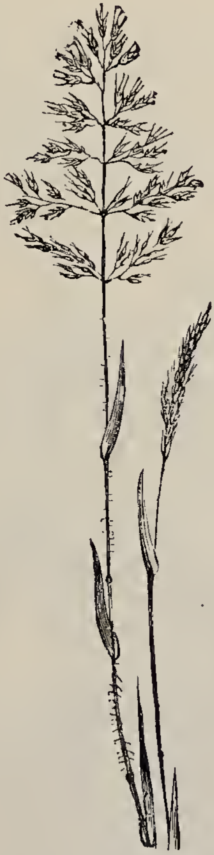
4. *D. flexuósa* (Wavy Hair-grass).—A closely allied species, with short, blunt, almost bristle-like *leaves* with short, truncate ligules and rough sheaths; *panicle* spreading, 2—3 in. long, triply forked with wavy branches; *spikelets* shining, with fine, hair-like, bent, twisted, sub-basal awns protruding beyond the glumes; *pedicel* of upper flower not a quarter of its length.—Heathy places; common.—Fl. June, July. Perennial.

23. HÓLCUS (Soft-grass).— *Spikelets* numerous, much compressed laterally, in an open panicle, 2-flowered; *lower flower* perfect, awnless; *upper* stami-



HÓLCUS MÓLLIS (*Creeping Soft-grass*).

nate, with a twisted dorsal awn to its 5-nerved *flowering glume.* (Name said to be from the Greek *holkos*,



TRISÉTUM PRATÉNSÉ (*Yellow Oat*).

connected with *helkó*, I draw, referring to a supposed power of drawing thorns out of the flesh.)

1. *H. móllis* (Creeping Soft-grass.—*Root-stock* creeping; *stems* about a foot high, hairy at the nodes,

slender; *leaves* rough, with smooth sheaths; *panicle* 2—3 in. long, rather loose, whitish; *upper glumes* acute; the awn of the *flowering glume* of the upper flower rough, projecting beyond the glumes.—On light soil; abundant.—Fl. July, August. Perennial.

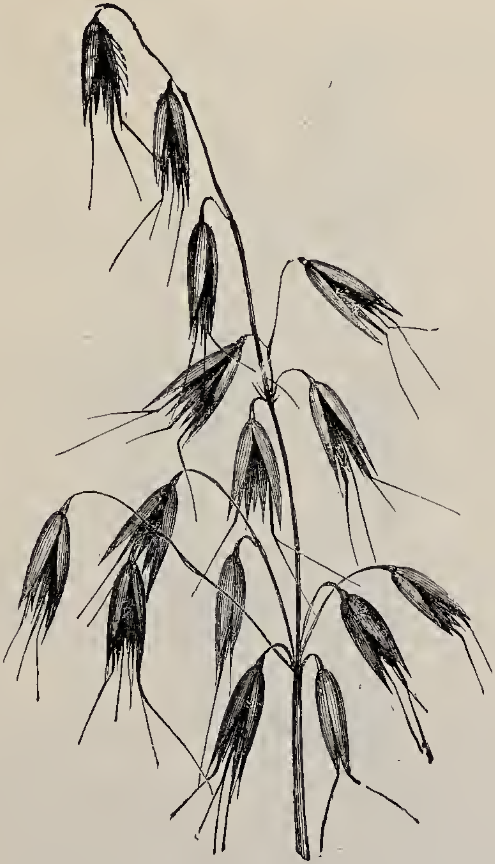
2. *H. lanátus* (Yorkshire Fog, Meadow Soft-grass).—A similar plant, tufted, 1—2 feet high, the whole plant clothed with a very short down, giving it a pale soft appearance; *panicle* pale whitish or reddish; *upper glumes* blunt; *awn* smooth, except at the tip, not projecting.—Meadows; abundant.—Fl. July, August. Perennial.

24. TRISÉTUM, of which *T. praténsé* (Yellow Oat) is the only British species, has erect, smooth *stems*, 1—2 feet high, with runners; *radical leaves* flat and hairy, with blunt ligules; *panicle* with slender, spreading branches; *spikelets* numerous, shining, yellowish, 3—4-flowered; *glumes* very unequal; *flowering glume* with two awned points and a short, twisted, bent, dorsal awn between them.—Dry pastures; common. (Name from the Latin *tri*, three, *seta*, bristle.)—Fl. June—August. Perennial.

25. AVÉNA (Oat).—A genus closely allied to the preceding, with *panicles* of large, 2- or more-flowered spikelets; *glumes* sub-equal; *flowering glume* 2-fid, with a long, twisted, bent, terminal awn; *ovary* hairy at the top; *fruit* adherent to the glume. (Name, the Classical Latin name for the Oat.)

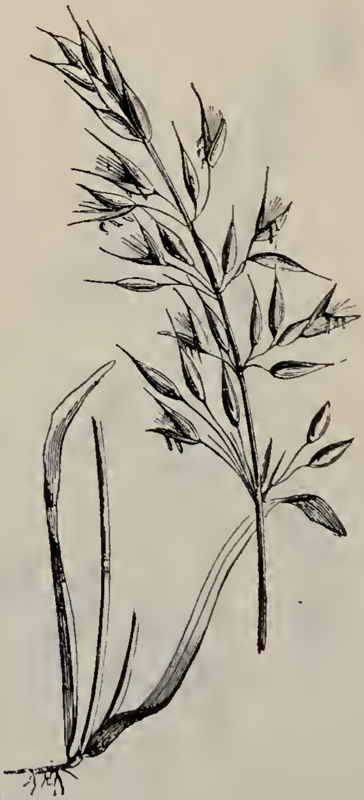
1. *A. pubéscens* (Downy Oat).—*Stem* creeping below, 1—2 feet high; *radical leaves* short, downy, with acute ligules; *panicle* nearly simple, lower branches in fives, bearing 2—4 sub-erect spikelets.—Dry or chalky pastures; common.—Fl. June, July. Perennial.

2. *A. praténsis* (Narrow-leaved Perennial Oat).—A nearly allied species, with runners; *stems* rough, erect, 1—3 feet high; *leaves* smooth, glaucous, with ovate, acute ligules; *panicle* racemose; *spikelets* erect, pale, shining, $\frac{1}{2}$—$\frac{2}{3}$ in. long, 3—4-flowered; *awn* twice as long as the flowering glume.—Dry pastures; frequent.—Fl. June—August. Perennial.



AVENA FATUA (*Havers, Wild Oat*).

3.* *A. strigósa* (Bristle Oat).—*Stems* 2—3 feet high *; leaves* sometimes hairy ; *panicle* 1-sided ; *spikelets* 2-flowered, drooping ; *flowering glume* smooth, ending in 2 long, straight, bristles.—Cornfields ; rare, not indigenous.—Fl. June—August. Annual.



ARRHENÁTHERUM AVENÁCEUM (*Common False Oat*).

4. *A. fátua* (Havers, Wild Oat).—Nearly allied to the preceding, but stouter ; *stems* smooth, but with hairy nodes ; *leaves* rough ; *panicle* loose, 6—10 in.

long, spreading ; *spikelets* 3-flowered, 1 in. long, on unequal pedicels, drooping, green ; *flowering glume* with long, brown hairs outside.—Cornfields ; frequent.—Fl. June, July. Annual.

26. Arrhenátherum (Oat-grass), of which *A. avenáceum* (False Oat) is the only British species, has a creeping or tuberous *root-stock ; stem* 2—3 feet high, slender, smooth ; *leaves* rough, flat ; *panicle* 6—12 in. long, narrow, nearly simple, with sub-erect branches, only spreading when the flowers are open ; *spikelets* ½in. long, pale greenish, 2-flowered ; *lower flower* staminate, with long, basal, bent, twisted awn ; *upper* perfect, usually awnless.—Hedges and pastures ; common. (Name from the Greek *arrhén*, male, *athér*. awn.)—Fl. June, July. Perennial.

FIBICHIA UMBELLÁTA (*Creeping Dog's-tooth grass*).

27. Fibíchia (Dog's-tooth grass), of which *F. umbeláta* (Creeping Dog's-tooth grass) is the only British species, is a low, prostrate grass, with long, tough runners and short, flat, glaucous *leaves*, distinguished from all other British grasses, except *Pánicum sanguinálé* and *P. glábrum*, by the digitate arrangement of the 3—5 slender, purplish spikes in its *panicle*, each of which is 1—1½ in. long, and from those two species by having

SIEGLÍNGIA DECÚMBENS (*Creeping Heath-grass*).

its awnless spikelets arranged singly, not in pairs, along the spikes.—Sandy pastures by the sea in the south-western counties; very rare. It is a good sand-binder and one of the best pasture grasses of many dry climates, such as India, where it is called *Doorba* or *Doab-grass,* and Bermuda, where it is called *Bermuda-*

PHRAGMÍTES COMMÚNIS (*Common Reed*).

grass. (Named in honour of J. Fibich, a German botanist.)—Fl. July, August. Perennial.

28. Sieglíngia (Heath-grass), of which *S. decúmbens* (Creeping Heath-grass) is the only British species, is a bright green, densely tufted plant with stiff, smooth *stems*, 6—12 in. high; blunt, thick *leaves* with a tuft of hairs for a ligule; *spikelets* 5 or 6, rarely 7—10, in a flexuous raceme, 3—4-flowered, rather large, awnless, pale green and purplish; *flowering glume* 5-ribbed, hairy at the base, with 3 minute teeth at the top.—Dry heaths and moors; common, indicating poor soil. (Named in honour of Professor Siegling, of Erfurt.)—Fl. July, August. Perennial.

29. Phragmítes (Reed), of which *P. commúnis* (Common Reed) is the only species, is a stout grass, 5—10 feet high, with a long, creeping *root-stock;* numerous long *leaves*, often an inch broad, glaucous beneath, all up the stem; a dense, drooping *panicle* 10—18 in. long, of a purplish-brown colour, with numerous branches; *spikelets* very numerous, $\frac{1}{2}$—$\frac{3}{4}$ in. long, shining, 1—6-flowered, awnless, with long, silky hairs on the rachilla which lengthen as the fruit ripens and give the panicle a beautiful silvery appearance. —In wet ditches, marshes, and shallow waters, almost all over the world; common. It is very serviceable on river banks for binding the soil, and is used for thatch. The runners are nutritious, containing much sugar, and might be used as fodder. (Name said to be from the Greek *phragma*, a hedge.)—Fl. July, August. Perennial.

30. Sesléria (Moor-grass), of which *S. cærúlea* (Blue Moor-grass) is the only British species, is a tufted plant with *stems* 6—12 in. high; short, linear, glaucous *radical leaves* with small rough points;

panicle oblong, rather 1-sided, $\frac{1}{2}$—$\frac{3}{4}$ in. long, dark blue-grey or lead colour.—Limestone and micaceous rocks ;

CYNOSÚRUS CRISTÁTUS (*Crested Dog's-tail*).

local in the north, and in the West of Ireland. (Named in honour of Leonard Sesler, an Italian botanist.)—Fl. April—June. Perennial.

31. Cynosúrus (Dog's-tail).—*Spikelets* in a 1-sided, spike-like panicle, 2—5-flowered, with bristly comb-like glumes below them, awnless. (Name from the Greek *oura*, tail, *kunos*, of a dog.)

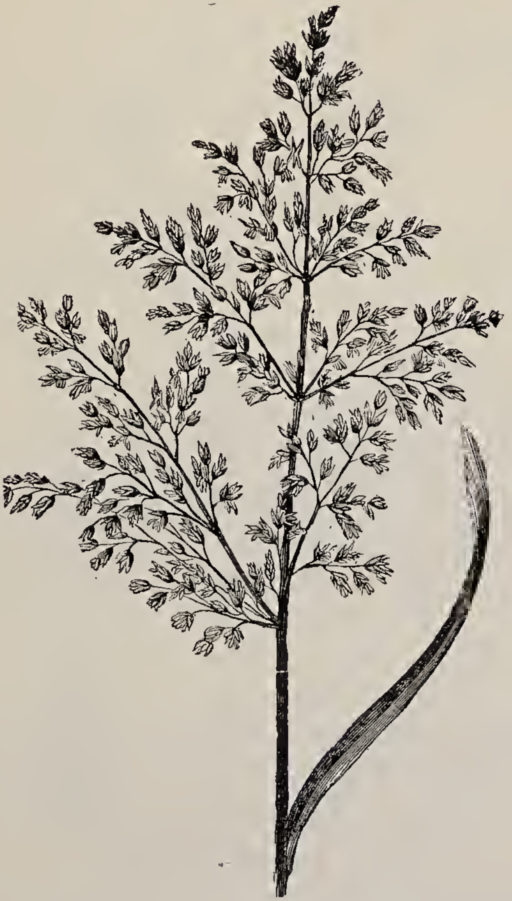
1. *C. cristátus* (Crested Dog's-tail). — Slightly tufted, with runners, *stems* slender, erect, about a foot high; *leaves* short, narrow, with 2-fid ligules; *spike* 1—4 in. long, simple, unilateral; *flowering glumes* shortly awned.—Pastures; abundant. A useful grass; but the wiry stalks when not eaten by sheep remain in a dry state and are known as "bents."—Fl. July, August. Perennial.

2. *C. echinátus* (Rough Dog's-tail).—A larger plant with broad, flat *leaves* and an ovate, irregularly lobed *panicle; awn* as long as the *flowering glume.*—Sandy places in the Channel Islands.—Fl. July, August. Annual.

32. Koeléria, of which *K. cristáta* (Crested Hair-grass) is the only British species, 6—12 in. high, downy; *spikelets* 2—5-flowered, compressed, in nearly sessile clusters, crowded into an interrupted oblong spike, 1—4 in. long; *flowering glumes* membranous, white, with a green keel, pointed, giving the spike a variegated, shining, silvery-grey aspect.—Dry pastures; common. (Named in honour of G. L. Köler, a German writer on grasses.)—Fl. June, July. Perennial.

33. Molínia, of which *M. vária* (Purple Molínia, or Purple Melic) is the only species, is a rather coarse, stiff plant, sometimes 3 feet high, with 1 node near the base of the *stem; leaves* chiefly radical, long, linear, attenuate, rather stiff, without ligules; *panicle* 6—12 in. long, narrow, loose, generally purplish, with slender, erect branches; *spikelets* few, erect, lanceolate, 1—3-flowered, awnless; *glumes* acute, equal.—Wet

heaths; common. Growing in tussocks in company with *Scabiósa succísa.* The stems are sold in bundles by tobacconists for cleaning pipes. (Named in honour of G. J. Molina, a Chilian botanist.)—Fl. July, August. Perennial.



CÁTABRÓSA AQUÁTICA (*Water Whorl-grass*).

34. CATABRÓSA (Whorl-grass), of which *C. aquática* (Water Whorl-grass) is the only species, is a soft, smooth, pale green plant, creeping or floating below, sometimes much branched, 1—2 feet high; *leaves* short, flat, blunt, with inflated sheaths and blunt ligules; *panicle* 1—4 in. long, pyramidal, with slender, spreading, whorled branches; *spikelets* 1—3-flowered; *empty glumes* very unequal, and both these and the

MÉLICA UNIFLÓRA (*Wood Melic-grass*).

flowering-glume truncate and torn at the top.—In ditches and by the margins of ponds; rather scarce, though distributed over the whole island. One of the sweetest of grasses, water-fowl and cattle being fond of it; but unsuitable for cultivation from the character of its habitat. (Name from the Greek *katabrósis*, an eating out, alluding to the torn ends of the glumes.)—Fl. May, June. Perennial.

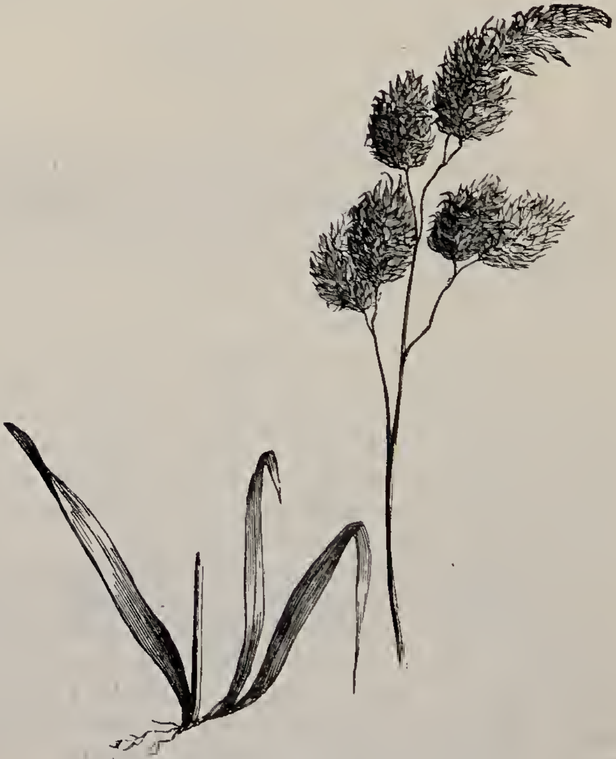
35. MÉLICA (Melic).—*Panicle* slender; *spikelets* rather large and few, ovate, awnless, 1—2-flowered; *glumes* nearly equal; *rachilla* produced and terminated by a club-shaped rudimentary flower of empty glumes; *fruit* loosely wrapped in the flowering glume. (Name said to be from the Latin *mel*, honey, on account of the sweetness of the stem.)

1. *M. nútans* (Mountain Melic).—A slender, erect plant, 1—2 feet high, with delicate, flat, sparsely hairy *leaves; panicle* 2—3 in. long, nearly a simple raceme, 1-sided, with slender, short, usually erect branches; *spikelets* about 5—15, drooping, brown or purple, 2-flowered.—Shady rocky places in the north and west.—Fl. May, June.—Perennial.

2. *M. uniflóra* (Wood Melic).—An elegant, very slender plant, 1—2 feet, with long, narrow *leaves*, with a sheath closed, as in the sedges, and a short, blunt ligule with a slender acuminate lobe on one side; *panicle* lax, slightly drooping, with few, long, slender branches, each bearing 1 or more of the erect, 1-flowered, purple *spikelets*.—Shady woods; common.—Fl. May—July. Perennial.

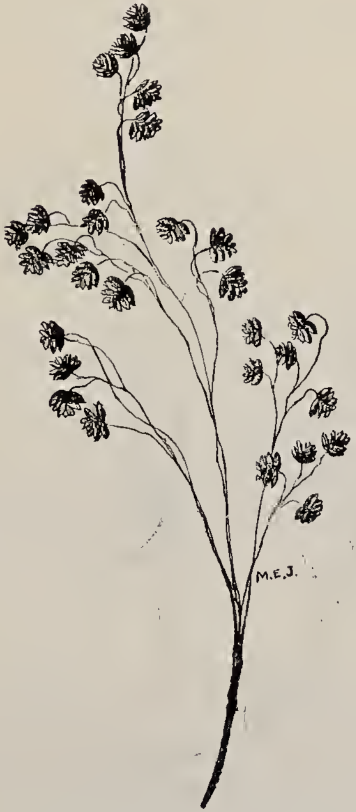
36. DÁCTYLIS, of which *D. glomeráta* (Cock's-foot Grass) is the only species, is a coarse grass, 1—2 feet high, creeping below, with long, broad, flat *leaves* with rough sheaths and long ligules; *spikelets* numerous,

small, rough, ovate, flattened, 3—5-flowered, densely crowded into thick 1-sided, ovate clusters, arranged in an irregular *panicle* with a few long branches below, horizontal in flower, erect in fruit; *glumes* lanceolate, strongly keeled, shortly awned just below the tip.—Meadows; abundant. A valuable agricultural grass. (Name from the Greek *dáktulos*, a finger, from the finger-like clusters of spikelets.)—Fl. June—August. Perennial.



DÁCTYLIS GLOMERÁTA. (*Cock's-foot Grass*)

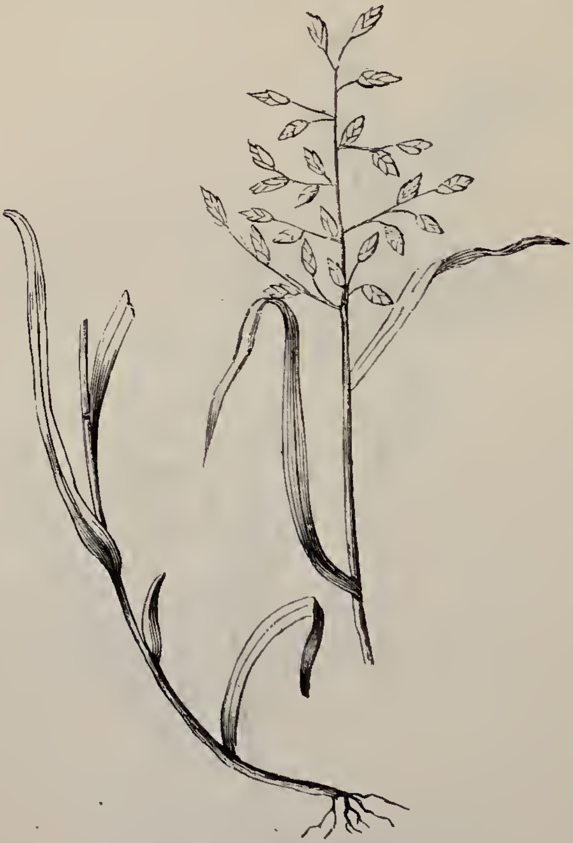
37. **Bríza.**—(Quaking- or Totter-grass).—*Panicle* loose, with slender branches; *spikelets* pendulous, short, flat, broad, 3- or more-flowered, unawned; *glumes* membranous, boat-shaped, blunt, densely and distichously imbricate. (Name from the Greek *brithó*, I balance, from the delicately suspended spikelets.)



BRÍZA MÉDIA (*Common Quaking-grass*).

1.* *B. máxima* (Greatest Quaking-grass), with large, oblong, cordate, 9—17-flowered *spikelets*, is becoming naturalised in Jersey.

2. *B. média* (Common Quaking- or Totter-grass).



PÓA ÁNNUA (*Annual Meadow-grass*).

—A favourite little plant, a foot or more in height, with a short, truncate ligule to its *leaves*, and a very loose, spreading *panicle* of ovate *spikelets* variegated with green and purple, and containing 5—9 *flowers*, usually 5 or 6.—Downs and dry pastures; common. —Fl. June, July. Perennial.

3. *B. mínor* (Lesser Quaking-grass).—A smaller and more slender plant with a long, acute ligule to its *leaves* and more numerous, pale green, triangular, *spikelets* containing about 7 *flowers.*—Dry and sandy fields in the south-west; rare.—Fl. July, August. Annual.

38. Póa (Meadow-grass).—*Spikelets* panicled, awnless, compressed, 2- or more-flowered; *glumes* rather unequal, generally acute; *flowering glume* compressed, keeled, 3—5-veined, not adherent to the fruit. (Name from the Greek *poa*, fodder.)

1. *P. ánnua* (Annual Meadow-grass). — Tufted, 2—10 in. high, with flat, flaccid, bright green glabrous *leaves; panicle* erect, loose, spreading, with a triangular outline, 1½—3 in. long, somewhat 1-sided, with branches in pairs, becoming deflexed; *spikelets* 3—6-flowered; *flowering glume* 5-nerved. — Waste places, everywhere.—Fl. nearly all the year round. Annual.

2. *P. bulbósa* (Bulbous Meadow-grass).—A low, tufted, glabrous plant, 6—10 in. high, remarkable for the bulbs formed by the swollen base of the stems and leaf-sheaths; *leaves* narrow, finely serrate, with long, acute ligules; *panicle* ovoid, scarcely spreading, not much more than an inch long, with branches in pairs; *spikelets* ovate, 3—4-flowered; *flowering glume* pointed, keeled, with minute, silky hairs on keel and edges, and a few short, woolly ones on the rachilla at its base.—Sandy shores, chiefly in the south-east; rare.—Fl. April, May. Perennial.

3. *P. alpína* (Alpine Meadow-grass).—A nearly allied species, tufted, often somewhat swollen at the base; *leaves* short, rather broad, rounded and mucronate at the tip; *panicle* spreading, 2 in. long, with

branches in pairs, frequently viviparous, the *spikelets* being converted into leafy bulbils.—Lofty mountains in the north; very rare.—Fl. June—August. Perennial.

4. *P. stricta*, a closely allied form, has slightly compressed *stems*; narrower *leaves* flat throughout; *panicle* open in flower and spreading in fruit, often viviparous; *spikelets* 3—4-flowered, with few or no hairs on the rachilla.—Loch-na-Gar; very rare.—Fl. July, August. Perennial.

5. *P. láxa* (Wavy Meadow-grass), another very closely allied form, has channelled *leaves* hollowed at the tip; *panicle* open in flower and closed in fruit, rarely viviparous; *spikelets* 3—4-flowered, webbed with fine cottony fibres on the rachilla.—Loch-na-Gar; very rare.—Fl. July—August. Perennial.

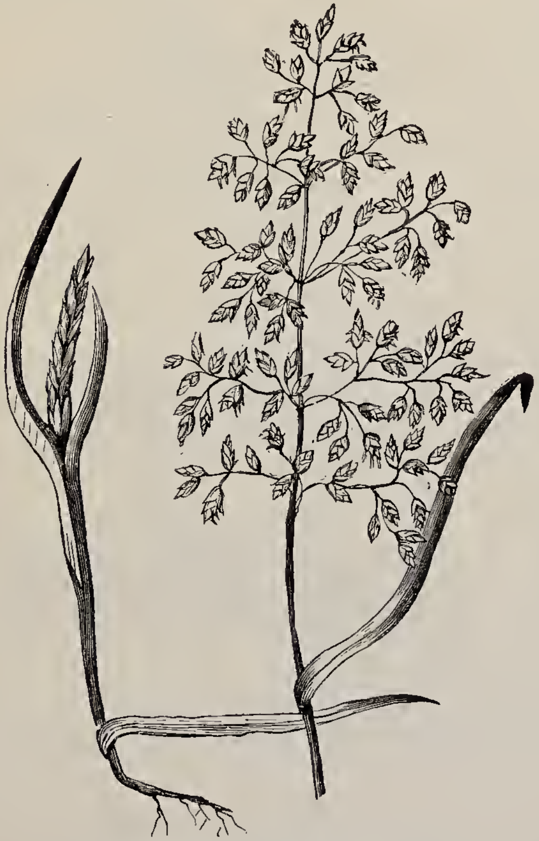
6. *P. glaúca* (Glaucous Meadow-grass).—A slightly creeping plant, 6—12 in. high, with glaucous *leaves* with very short, blunt ligules; *panicle* slender, erect; *spikelets* 2—3-flowered; *flowering glume* with 5 veins, only 3 hairy.—Lofty mountains, Ben Lawers, Ben Nevis, Clova, Snowdon; very rare.—Fl. July. Perennial.

7. *P. Balfoúrii*, an almost indistinguishable form, rather larger, with *leaves* not glaucous, with longer, blunt ligules; *spikelets* 2—4-flowered, sometimes webbed.—Occurs in similar positions.

8. *P. nemorális* (Wood Meadow-grass).—Another closely allied, very variable form, or series of forms, is a slightly creeping, slender, glabrous plant, 1—3 feet high; *leaves* narrow, with short ligules; *panicle* slender, rather drooping, 2—5 inches long, spreading or close, sometimes 1-sided, with branches 2—5 together; *spikelets* small, 1—5-flowered, generally 3-flowered, yellowish-green and purplish, generally webbed; *flowering glume* with 5 veins, 3 hairy.—Woods; general.—Fl. June, July. Perennial.

9. *P. compréssa* (Flat stalked Meadow-grass).—A

glabrous and somewhat glaucous species, with creeping *root-stock* and runners ; *stem* flattened, 6—18 in. high ; *leaves* flat, with short, truncate ligules ; *panicle* 2—3 in. long, slightly 1-sided, spreading when in flower, branches 2—3 together; *spikelets* ovate, 4—7-flowered, slightly webbed ; *flowering glume* with 3—5 hairy veins.—Walls and other dry places ; frequent.—Fl. June—July. Perennial.



PÓA PRATÉNSIS (*Smooth Meadow-grass*).

10.* *P. Chaixii*, with a 2-edged *stem* 2—3 feet high; *leaves* with rough sheaths, midribs, and margins, and very short, blunt ligules; *panicle* spreading; *spikelets* oval, of 3, rarely 5 flowers, not webbed; *flowering glume* with 5 smooth veins, occurs in deep shady places near Kelso. Perennial.

11. *P. praténsis* (Smooth Meadow-grass).—*Rootstock* creeping, with runners; *stem* round, smooth, 1—2 feet high, but very variable in size; *leaves* sometimes glaucous, smooth, with long, blunt ligules; *panicle* 2—6 in. long, spreading, with slender branches 3—5 together; *spikelets* ovate, 3—4-flowered, much webbed; *flowering glumes* with 5 prominent veins, 3 hairy.—Meadows; abundant.—Fl. June, July. Perennial.

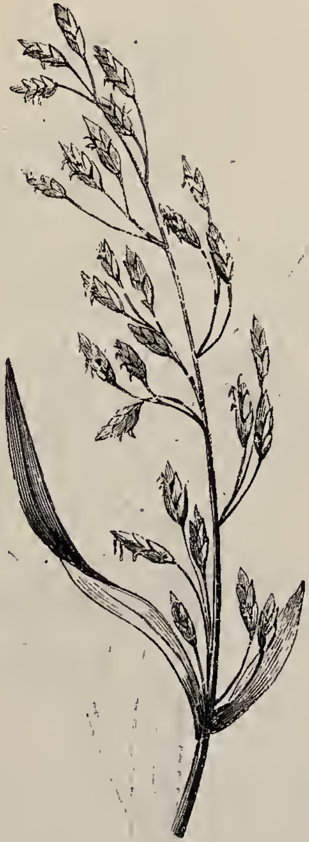
12. *P. palústris* (Marsh Meadow-grass).—Without runners; *leaves* with longer and more conspicuous ligules than the preceding; *flowering glumes* indistinctly veined.—Marshes by the Tay below Perth.—Fl. July. Perennial.

13. *P. triviális* (Rough Meadow-grass).—Chiefly distinguished from *P. praténsis* by the absence of runners; a general roughness of surface; long, acute ligules; more slender *panicles*, often 6 in. long, with slender, spreading branches given off 5 together; *spikelets* usually 2-flowered, rarely 1 or 3—5; *flowering glume* 5-veined, marginal veins glabrous.—Moist places; abundant.—Fl. June, July. Perennial.

39. Glycéria (Manna-grass.)—Tall, semi-aquatic, perennial grasses, with unsplit *leaf-sheaths*; *spikelets* panicled, awnless, many-flowered; *glumes* unequal, membranous, obtuse; *flowering glume* sub-cylindric, 3—9-ribbed, obtuse. (Name from the Greek *glúkeros*, sweet, in allusion to the sweetness of the grain.)

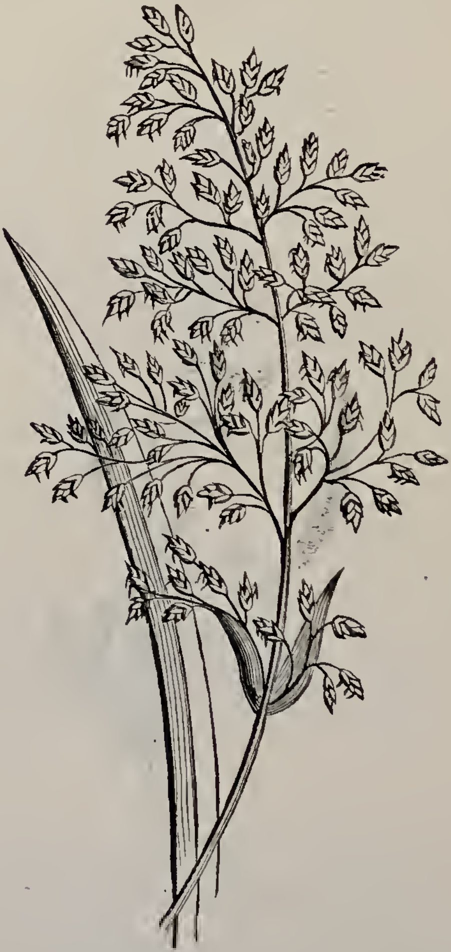
1. *G. flúitans* (Flote-grass, Manna-croup).—*Rootstock* creeping; *stem* 1—3 feet, thick, but weak, smooth,

floating, or creeping; *leaves* often floating, flat, acute, with long, compressed, striate sheaths; *panicle* slender, about a foot long, slightly branched, branches erect in fruit; *spikelets* few, linear, adpressed, $\frac{1}{4}$—2 in. long, 7—20-flowered; *flowering glume* nearly thrice as long as broad; *anthers* about five times as long as broad, purple, yellowish when empty.—Watery places; common.—Fl. June—September. Perennial.



GLYCÉRIA FLÚITANS (*Flote-grass, Manna-croup*).

2. *G. plicáta* (Plaited-leaved Manna-grass,, a nearly allied form, has glaucous, rather blunt *leaves*, plaited



GLYCÉRIA AQUÁTICA (*Reed Manna-grass*).

when young, with furrowed sheaths; *panicle* with many branches, spreading when in fruit; *flowering* *glume* twice as long as broad; *anthers* about thrice as long as broad, cream-coloured, brownish when empty. —Stagnant water; frequent.—Fl. June—August. Perennial.

3. *G. aquática* (Reed Manna-grass).—A conspicuous and imposing grass, 4—6 feet high; *root-stock* creeping; *leaves* never floating, sub-erect, flat, rough on the edges, with long, smooth sheaths; *panicle* erect, about a foot long, much branched, with spreading, slender branches; *spikelets* numerous, 5—10-flowered, oblong; *flowering glumes* 1½ line long, loosely imbricate, 5—7-ribbed.—Watery places; frequent in England and Ireland, but rare in Scotland. A fine covert for waterfowl.—Fl. April—August. Perennial.

4. *G. marítima* (Sea Manna-grass).—*Root-stock* creeping, with runners; *stems* about a foot high; *leaves* involute, with smooth sheaths; *panicle* erect, 1-sided, 1—4 in. long, generally compact, branches short, solitary, or in pairs, rarely 3 or more together; *spikelets* not numerous, 4—8-flowered; *flowering glume* apiculate.—Sandy or muddy-salt marshes; frequent. —Fl. June—September. Perennial.

5. *G. dístans* (Reflexed Manna-grass).—An allied species, tufted and generally without runners; *stems* 1—2 feet high, slender; *leaves* flat; *panicle* spreading, with long, slender branches, 4—5 together, ultimately deflexed; *spikelets* ¼ in. long, 3—7-flowered; *flowering glume* truncate.—Sandy salt marshes; not common.— Fl. June—October. Perennial.

6. *G. Borréri*, somewhat intermediate between the two preceding species, is densely tufted, without runners, 6—20 in. high; *leaves* flat; *panicle* 3—6 in. long, with short branches 2—4 together, ascending; *spikelets* very small, crowded, 3—7-flowered; *flowering glume* apiculate.—Salt marshes on the east and south coasts; rare.—Fl. June—August. Perennial.

40. FESTÚCA (Fescue).—*Leaf-sheath* generally split

to the base; *spikelets* in a spike or panicle, 3- or more-flowered; *flowering glume* rounded at the back, 3—5-ribbed, pointed or awned; *styles* at the top of the smooth *ovary*. (Name, a Classical Latin name.)

1. *F. procúmbens* (Procumbent Fescue).—Tufted, decumbent, 3—8 in. high, stiff; *leaves* flat, glaucous, with inflated sheaths; *panicle* 1-sided, 1—2 in. high, compact, with short, stout, ascending, rigid, distichous branches; *spikelets* small, crowded, nearly sessile, about 4-flowered; *flowering glumes* 3—5, 5-ribbed, apiculate.—Salt marshes; uncommon.—Fl. June—August. Annual.

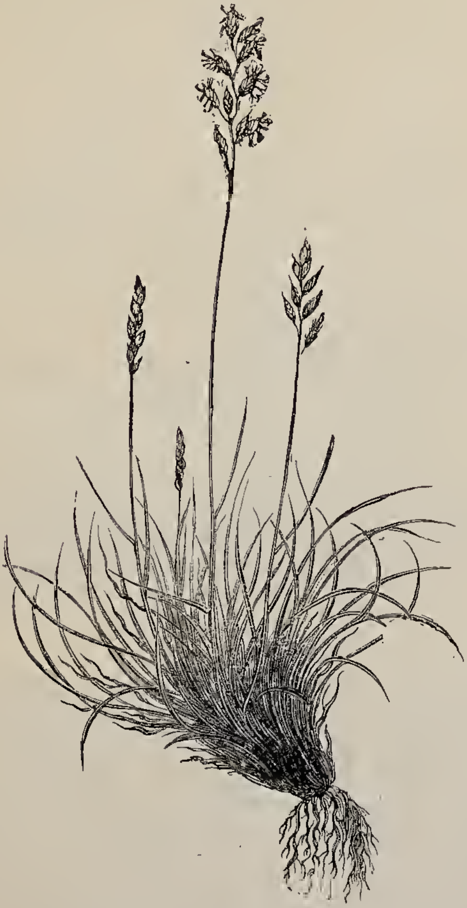
2. *F. rígida* (Hard Fescue).—A tufted, stiff, glabrous, often purple plant, 4—6 in. high; *panicle* about 2 in. long, with distichous branches, a broadly channelled rachis, and 3—5 *spikelets*, which are about 3 lines long and 6—8-flowered; *flowering glume* smooth, shining, apiculate.—Dry places; common.—Fl. June—July. Annual.

3. *F. rottbœllioïdes* (Dwarf Darnel-like Fescue).—A glabrous, green, stiff, dwarf plant, 2—6 in. high, resembling the preceding; *spikelets* nearly sessile in 2 rows on alternate sides of the rachis, but all turning one way so as to resemble a 1-sided spike; *spikelets* about 3 lines long, 6—12-flowered; *flowering glumes* mucronate, with well-marked marginal veins.—Sandy sea-shores; uncommon.—Fl. June—August. Annual.

4. *F. uniglúmis* (Single-husked Fescue). — *Stem* 4—12 in. high, bent below, slender, glabrous, leafy; *leaves* bristle-like; *panicle* 1-sided, spike-like, but with some very short lower branches in pairs, 2 in. long, pale green, shining; *spikelets* 4—10-flowered; *outermost glume* wanting, 2nd awned; *flowering glumes* ending in awns longer than themselves.—Sandy sea-shores in the south; rare.—Fl. June, July. Annual or biennial.

5. *F. ambígua* (Doubtful Fescue). — A slender

plant, 8—12 in. high, with narrow, involute *leaves; panicle* long, narrow, erect, close; *upper empty glume* 3—6 times as long as the *lower; flowering glumes* ending in awns as long as themselves; *stàmen* 1.—Sandy



FESTÚCA OVÍNA (*Sheep's Fescue*).

places, Dorset, Isle of Wight, Suffolk, and Norfolk; very rare.—Fl. May—June. Annual.

6. *F. Myúros* (Rat's-tail, or Wall Fescue).—A closely allied, but generally taller species, about a foot high, slender; *panicle* 2—6 in. long, slender, 1-sided, sometimes spike-like, interrupted, nodding; *upper empty glume* thrice as long as the *lower.*—Walls and sandy places; not uncommon.—Fl. June, July. Annual.

7. *F. sciuröïdes* (Squirrel-tailed Fescue).—Another closely allied species, differing in the upper part of the *stem* being leafless; the shorter *panicle* being more open, with slender ascending branches below; and the *upper empty glume* twice as long as the *lower.*—Occurs in similar situations more commonly. —Fl. June, July. Annual.

8. *F. ovína* (Sheep's Fescue).—A densely tufted, glaucous grass, 3—24 in. high; *stem* slender, 4-angled, rough below the inflorescence; *leaves* chiefly radical, subulate, almost cylindric, with 2-lobed ligules; *panicle* rather compact, slightly 1-sided, 1½—4 in. long, purplish; *spikelets* small, 3—6-flowered; *flowering glumes* mucronate or with an awn shorter than themselves, often viviparous.—Dry hilly pastures; one of the commonest grasses. Very variable.—Fl. June, July. Perennial.

9. *F. rúbra* (Creeping Fescue).—A creeping plant with runners and scattered tufts; *stem* many-angled, smooth below the inflorescence; *leaves* bristly, flat or involute; *panicle* broadish below, slightly 1-sided, reddish; *spikelets* 4—10-flowered, shortly awned.—Sandy places; common. Very variable.—Fl. June. Perennial.

10. *F. dumetórum*, a creeping plant with rush-like, cylindric, sharply-pointed *leaves* and downy *flowering glumes*, closely allied to the preceding, and occurring on sandy sea-shores, has been recorded as British.

11. *F. heterophýlla* (Various-leaved Fescue).—A densely tufted plant, 2—4 feet high; *radical leaves* numerous, capillary, triangular, rough, sometimes a foot long; *cauline leaves* flat, narrow, rather recurved; *ovary* downy at the apex; otherwise resembling *F. rúbra.*—Shady places in the south; a doubtful native.—Fl. June, July. Perennial.

FESTÚCA ELÁTIOR (*Tall Fescue*).

12. *F. sylvática* (Reed Fescue).—A tall, reed-like grass, 2—4 feet high, stiff, glabrous, with short run-

ners; *leaves* very long, rather broad, flat, glaucous above, rough-edged; *panicle* 3—6 in. long, much branched, spreading; *spikelets* numerous, small, awnless, 3—4-flowered, pale yellow-green; *flowering glumes* pointed, finely toothed along their dorsal ribs.—Moist hilly woods; uncommon.—Fl. July, August. Perennial.

13. *F. elátior* (Tall Fescue).—*Root-stock* creeping, with runners; *stems* 1—6 feet high, nodding, smooth; *leaves* linear-lanceolate, flat, smooth; *panicle* 3—10 in. long, nodding, with a 3-angled, smooth rachis, either spreading with rough branches in pairs, or (var. *praténsis*) reduced almost to a simple, 1-sided spike, with almost sessile, 3—10-flowered *spikelets*, ½—¾ in. long; *flowering glumes* 5-ribbed, obtuse, mucronate or acute.—River-banks and wet places; common.—Fl. June, July. Perennial.

14. *F. arundinácea* (Sea Fescue) is a closely allied species, forming large tufts, with *stems* 3—6 feet high, and a *panicle*, the branches of which are in pairs, spread outwards both in flower and fruit, and each bears 2 or more 5—6-flowered *spikelets*.—Banks near the sea; common.—Fl. June, July. Perennial.

41. Brómus (Brome-grass).—*Leaf-sheath* generally split half-way down; *spikelets* panicled or racemed, many-flowered; *flowering glume* rounded at the back, with a long dorsal awn; *styles* below the hairy top of the *ovary*. (Name from the Greek *bromos*, oats.)

1. *B. gigánteus* (Giant Brome).—A glabrous plant, 3—4 feet high; *leaves* very long, broad, flaccid, bright green, rough above, with smooth sheaths; panicle loose, with long, drooping branches in pairs and rough, 3-angled rachis; *spikelets* ½ in. long, 3—6-flowered, with slender, flexuous awn twice as long.—Shady places; common.—Fl. July, August. Perennial.

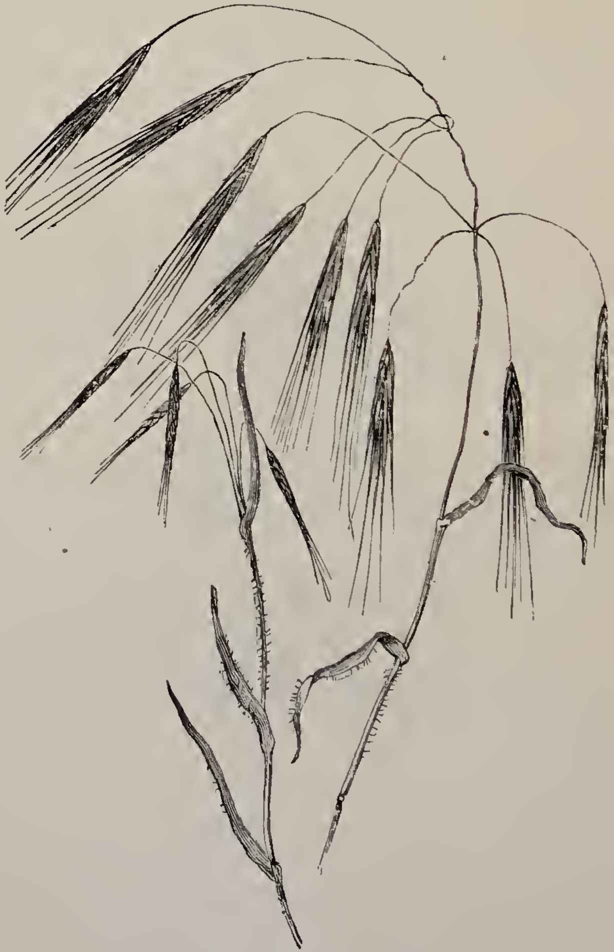
2. *B. ramósus* (Rough or Hairy Brome).—2—6

feet high; *leaves* long, flat, with scattered reflexed hairs on the sheaths; *panicle* loose, with long, slender branches, 2—6 together, drooping to one side; *spikelets* glaucous, linear-lanceolate, above an inch long, 5—10-flowered; *flowering glume* hairy, 5—7-ribbed, with a straight, fine awn half as long as itself.—Damp woods; common.—Fl. July, August. Annual or Perennial.

BRÓMUS RAMÓSUS (*Hairy Brome*).

3. *B. eréctus* (Upright Brome).—An erect plant, 2—3 feet high; *leaves* narrow, almost subulate; sheaths hairy, with ascending hairs; *panicle* compact and erect, 3—5 in. long; *spikelets* $\frac{1}{2}$—$1\frac{1}{2}$ in. long, 6- or more-flowered, linear-lanceolate; *flowering glume* hairy,

indistinctly 7-ribbed, twice as long as the awn.—



BRÓMUS STÉRILIS (*Barren Brome*).

Sandy fields; common.—Fl. July, August. Perennial.

4. *B. madriténsis* (Compact Brome).—*Stem* erect, seldom above a foot high, smooth, leafy; *leaves* narrow, flat, hairy; *panicle* erect, 2—4 in. long, with few, erect, adpressed branches and rough rachis and pedicels; *spikelets* linear-lanceolate; *flowering glume* 7-ribbed, with an awn as long as itself; *stamens* usually two.—Dry places in the south; rare.—Fl. June, July. Annual.

5.* *B. tectórum*, an introduced plant, occurring as a casual in cornfields, is closely allied to the preceding, but has a *panicle* drooping to one side and the *pale* much shorter than the flowering glume.

6. *B. rígidus* (Great Brome).—A beautiful grass, 1—2 feet high, pubescent; *panicle* erect, lax, ultimately drooping, slightly branched, 4—7 in. long; *spikelets* with their awns 2—3 in. long, pale green or purplish, long-stalked after flowering.—Sandy shores, Channel Islands.—Fl. June—August. Annual.

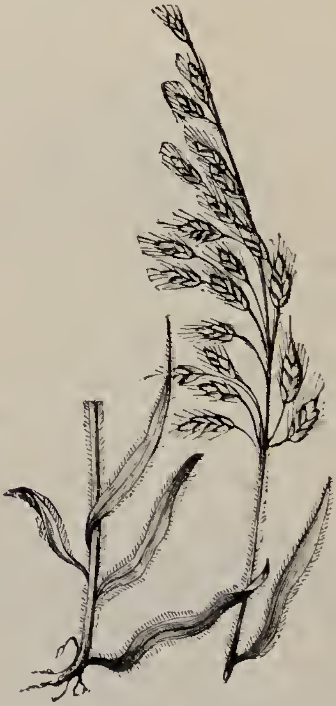
7. *B. stérilis* (Barren Brome).—*Stem* 1—2 feet high; *leaves* hairy; *panicle* 6—16 in. long, very lax, drooping, with very long branches; *spikelets* with their awns more than 2 in. long, 6—10-flowered; *flowering glume* rough on the back, distinctly 7-nerved, with a straight awn longer than itself.—Fields and waste places.—Fl. June—August. Annual.

8. *B. secalínus* (Rye Brome).—*Stems* erect, stiff, 1—4 feet high, smooth, or rarely pubescent; *panicle* slightly branched, loose, spreading, 3—5 in. long, with rough, flexuous rachis and branches 3—5 together; *spikelets* oblong, glabrous, 5—10-flowered; *flowering glume* longer than the pale, about as long as its awn.—Cornfields; common.—Fl. June—September. Annual.

9. *B. racemósus* (Smooth Brome).—A stiff, nearly smooth plant, 1—3 feet high; *leaves* stiff, ciliate; *panicle* long, erect, narrow, simple, with long, slender branches, 3—5-together; *spikelets* ovate, glossy, 6—10-flowered, with awns as long as the flowers; *lower empty*

glume lanceolate ; *flowering glumes* imbricate, rounded at the sides.—Fields and waste places.—Fl. June—September. Biennial.

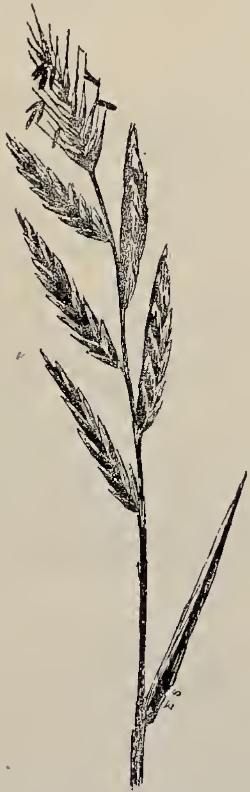
10. *B. commutátus* (Meadow Brome). — A stouter form, more hairy; *panicle* more compound, loose, slightly drooping ; *spikelets* shorter, oblong-lanceolate ; *flowering glumes* imbricate, bluntly angular at the sides.—Common.—Fl. June, July. Biennial.



BRÓMUS MÓLLIS (*Soft Field Brome*).

11. *B. móllis* (Soft Brome, Lop-grass).—A glaucous green, pubescent plant, resembling *B. racemósus*, 1—2 feet high ; *leaves* soft, with rough edges ; *panicle*

1—3 in. long, ovoid, erect, close, slightly branched, with very short branches; *spikelets* ovate, pubescent, 6—10-flowered; *lower empty glume* broadly ovate; *flowering glumes* imbricate, bluntly angular at the sides, pubescent, with awns as long as themselves.—Roadsides; common. Very variable.—Fl. May—July. Annual.



BRACHYPÓDIUM GRÁCILÉ (*Slender False Brome*).

12.* *B. arvénsis* (Field Brome), 1—3 feet high, with smooth *stem;* hairy *leaves; panicle* spreading, pyramidal, 4—8 in. long, with very long, hair-like, roughish branches given off 5—7 together and becoming horizontal, with a few green or dull violet lanceolate *spikelets*, each about ½ in. long, near their ends, and straight, dark *awns* as long as the flowers, is commonly naturalised.—Fl. July, August. Annual.

42. Brachypódium (False Brome). — Perennial grasses with long, many-flowered *spikelets* in a spike or raceme, with an unindented *rachis; glumes* unequal; *flowering glume* with a terminal awn; *ovary* hairy at the top. (Name from the Greek *brachús*, short, *podion*, a foot-stalk, in allusion to the short stalks of the spikelets.)

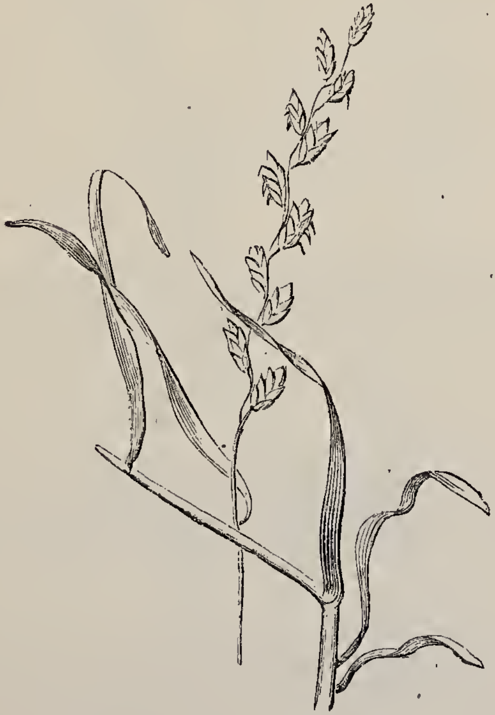
1. *B. grácilé* (Slender False Brome).—*Root* fibrous; *stem* usually solitary, erect, 1—3 feet high; *leaves* broad, flat, rather long, flaccid, hairy; *spikelets* 6—18, usually only 6 or 7, distichous, sub-sessile, adpressed, 1—2 in. long, nearly cylindric when young, flattened when in fruit, 8—10-flowered, in a loose *spike*, more or less drooping; *glumes* pointed; *flowering glume* ending in an awn as long as, or longer than, itself.—Woods and hedges; common.—Fl. June, July. Perennial.

2. *B. pinnátum* (Heath False Brome).—*Root-stock* creeping; *stems* several, erect, 1—3 feet high, smooth, glaucous; *leaves* narrow, involute, rigid, almost glabrous; *spike* erect, with smaller, green or purplish *spikelets* curving away from the rachis; *awn* shorter than the *flowering glume*.—Dry places on limestone; not common, absent from Scotland and Ireland.—Fl. July, August. Perennial.

43. Lólium (Rye-grass).—Perennial grasses with their *spikelets* solitary, sessile in the notches of a simple *rachis*, forming a *spike*, compressed, with their

edges towards the rachis, 3- or more-flowered. (Name, a Classical Latin name.)

1. *L. perénné* (Rye-grass, Way Bent).—*Stem* ascending, 1—2 feet high, with leafy runners; *spike* 6—12 in. long; *spikelets* not close together, 8- or more-flowered; *outer glume* strongly ribbed, not as long as the whole spikelet, varying in shape; *flowering glume* obtuse, pointed or awned.—Waste places; common.—Fl. May—July. Perennial.



LÓLIUM PERÉNNÉ (*Rye-grass Lolium*).

**L. itálicum* (Italian Rye-grass) is an annual or biennial variety, with much longer spikelets and more flowers, known only in a cultivated state. It is one of the most valuable of fodder-grasses.

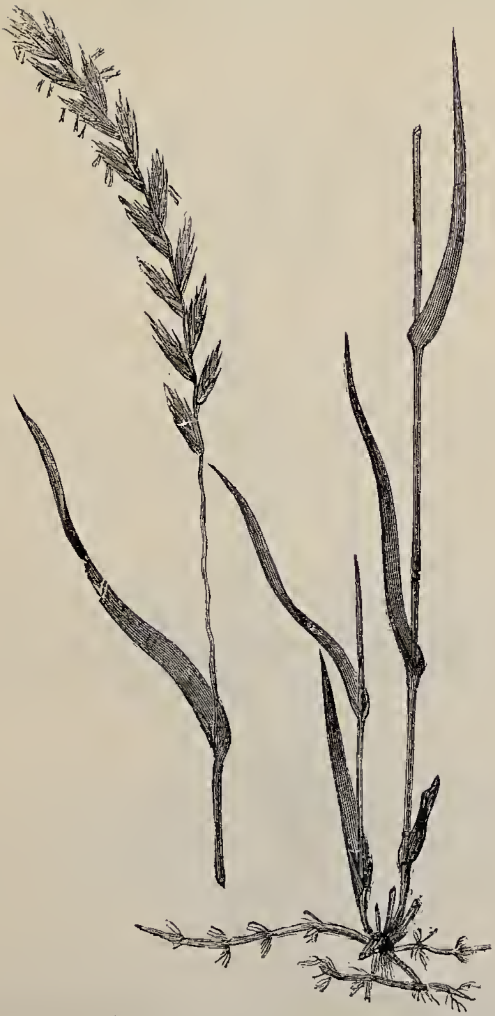
2.* *L. linícola*, occurring also in cultivated fields, is an annual, with no leafy runners, with a slender *spike* and *spikelets* 7—11-flowered.—Fl. June, July.

3. *L. temuléntum* (Darnel).—Closely allied to *L. perénné*, but without runners, and with *spikelets* usually about 6-flowered, not longer than the *outer glume; flowering glume* usually awned.—Cornfields; fortunately not common in Britain, as its fruit is so poisonous that when ground with flour it is said to cause serious headache and giddiness.—Fl. June—August. Annual.

44. AGROPÝRON (Couch-grass).—Perennial grasses with their *spikelets* solitary, sessile in the notches of a simple *rachis*, forming a *spike*, compressed, with their broad sides towards the rachis, 3- or more-flowered. (Name from the Greek *agros*, field, *puros*, wheat.)

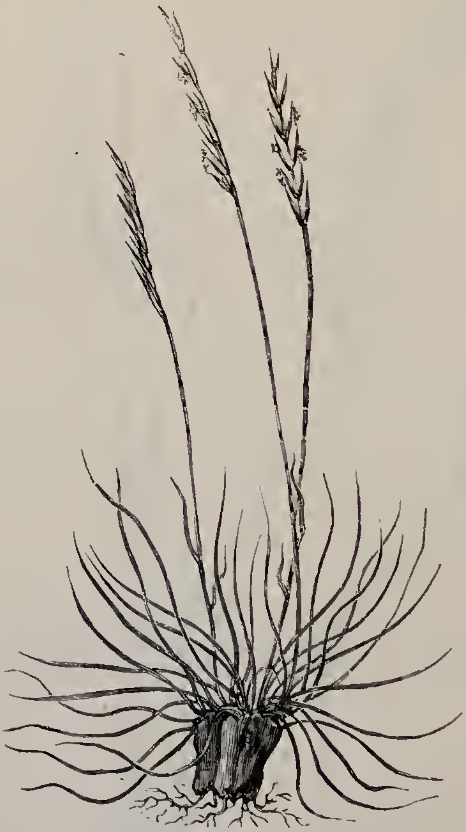
1. *A. canínum* (Bearded Couch).—*Root* fibrous; *stem* erect, 1—3 feet high, slender; *spike* 2—10 in. long, very slender, often flexuous and nodding; *spikelets* 2—5-flowered, bright green; *empty glumes* 3—5-ribbed, usually 3, shortly awned; *flowering glume* longer, prominently 5-ribbed, with a rather long terminal awn. Woods and waste places; frequent.—Fl. June, July. Perennial.

2. *A. répens* (Couch-grass).—*Root-stock* extensively creeping, long, jointed; *stems* solitary, ascending, glabrous, 1—2 feet high, hollow; *leaves* at first involute, afterwards flat, flaccid, with numerous slender ribs each with 1 row of rough hairs above; *spikelets* 3—7-flowered; *rachis* slender, not brittle; *empty glumes* acuminate, 5-ribbed; *awns* usually short. A very variable, common, and troublesome weed.—Fl. June—August. Perennial.



AGROPÝRON RÉPENS (*Couch-grass*).

3. *A. púngens* (Stiff-leaved Couch). — Densely tufted; *stems* solid above; *leaves* involute, firm, with numerous thick ribs, each with a row of sharp points above; *spikelets* 5—12-flowered.—Sandy sea-shores; rare.—Fl. July. Perennial.



NÁRDUS STRÍCTA (*Mat-grass*).

4. *A. acútum* (Acute Couch).—Loosely tufted; *stems* solid, bent below; *leaves* much as in the pre-

ceding; *spike* long, lax, arching; *spikelets* 4—8-flowered; *rachis* very broad between the spikelets.—Sandy sea-shores.—Fl. July, August. Perennial.

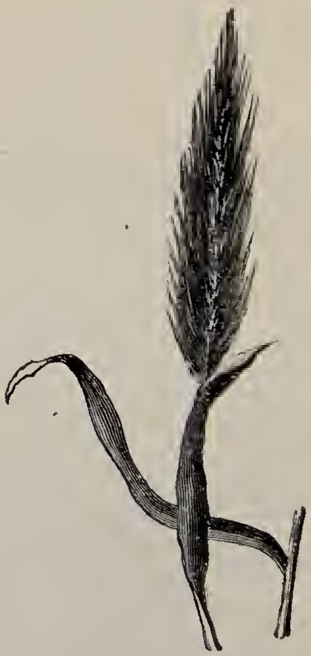
5. *A. júnceum* (Rush-like Couch).—A prostrate, stiff plant, creeping extensively so as to form large patches, often glaucous; *stems* ascending, smooth; *leaves* leathery, involute, downy above; *spike* 2—4 in. long, curved, rather lax, with a brittle rachis; *spikelets* large, shining, pale, 4—8-flowered; *glumes* often obtuse.—Sandy sea-shores; local.—Fl. July, August. Perennial.

45. Leptúrus, of which *L. filifórmis* (Sea Hard-grass) is the only British species, is a genus of slender grasses differing from *Agropýron* in having 1-flowered *spikelets.* These are, as in that genus, solitary and sessile in the notches of the rachis, distichous, and placed with their broad sides towards the rachis, and are awnless. Our British species is a little glabrous, decumbent grass, 4—8 in. high; *leaves* short, leathery, rough; *spike* 2—6 in. long, cylindric, slender, with a stiff, grooved rachis; *spikelets* $\frac{1}{4}$ in. long, green.—Waste places near the sea; uncommon. (Name from the Greek *leptos*, slender, *oura*, tail, from its slender spikes.)—Fl. July—September. Annual.

46. Nárdus (Mat-grass), of which *N. stricta* is the only species, is a densely tufted, erect, wiry, glabrous plant, 4—10 in. high, with fine, stiff, bristle-like *leaves*; *spike* erect, slender, 1—3 in. high, 1 sided; *spikelets* reddish or purplish, rather far apart, solitary in the notches of the rachis, 1-flowered; *outer glumes* absent; *flowering glume* shortly awned; *stamens* 3; *style* 1.—Heaths; common. (Name from the Greek *nardos*, some strong-smelling plant; but why applied to this scentless grass it is difficult to say.)—Fl. June, July. Perennial.

47. Hórdeum (Barley).—*Spikelets* 2 or 3 together in each notch of a simple rachis, sub-sessile, distichous, with their broad sides towards the rachis, each with one perfect flower; *outer glumes* and *flowering glumes* awned. (Name, the Classical Latin name.)

1. *H. sylváticum* (Wood Barley).—*Stems* 1—3 feet high, erect, smooth; *leaves* broad, flat, thin, rough, with reflexed hairs on sheaths; *spike* cylindric, not very dense, about 3 in. long; *spikelets* 3 together; *flowers* of the two lateral spikelets in each notch perfect, the central spikelet reduced to two narrow, linear glumes, empty, or rarely containing a staminate flower; *flowering glume* terminating in a long awn.—



HÓRDEUM MURÍNUM (*Wall Barley*).

Woods, on a calcareous soil; rare.—Fl. July, August. Perennial.

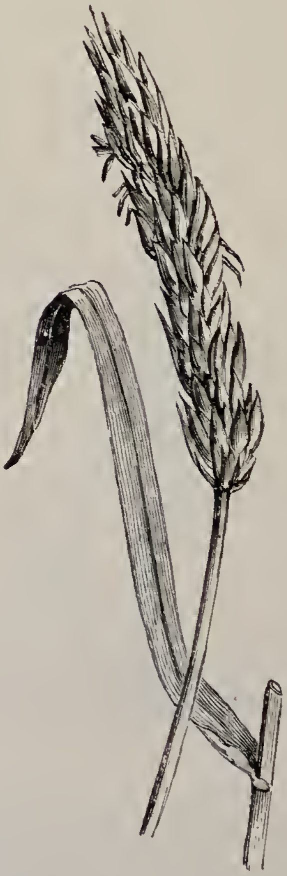
2. *H. secalínum* (Meadow Barley).—Creeping; *stems* very slender, ascending, 1—2 feet high; *leaves* rather narrow; *spike* 1—3 in. long, close, cylindric, compressed, inclined, yellow-green; *spikelets* 3 in each notch, the central one with a perfect flower, the two lateral ones imperfect; *glumes* all bristle-like, rough, with awns not longer than themselves.—Moist pastures; frequent.—Fl. June, July. Perennial.

3. *H. murínum* (Wall Barley).—A rather coarse grass; *root* fibrous; *stem* ascending, 6—18 in. high, smooth; *leaves* small, narrow, rough; *spike* dense, cylindric, compressed, 1—3 in. long, slightly nodding, green, thickly beset with long, rough awns; *spikelets* 3 in each notch, the central one with a perfect flower and linear-lanceolate, ciliate glumes, the two lateral ones with imperfect flowers and awn-like glumes.—Waste places; common.—Fl. June, July. Annual.

4. *H. marínum* (Squirrel-tail Grass, Sea Barley).—Nearly allied to the preceding but smaller and somewhat glaucous; *spike* 1—2 in. long, erect, with shorter, more spreading awns, becoming yellow-brown.—Pastures and banks near the sea in England.—Fl. June, July. Annual.

48. Élymus (Lyme-grass), of which *E. arenárius* (Sand Lyme-grass) is the only British species, is a stiff, glaucous grass, with a long, creeping *root-stock; stems* 2—6 feet high, stout, smooth; *leaves* stiff, broad, pointed; *spike* sometimes rather dense, 3—12 in. long, with the *spikelets* in rather distant pairs, or 3 together in the notches of the flexuous rachis, each an inch long, imbricate, adpressed, inserted with their broad sides towards the rachis, 2—7-flowered, awnless; *glumes* lanceolate, stiff, generally downy, very pointed.

—Sandy sea-shores, chiefly in the north.—Fl. July, August. Perennial.



ÉLYMUS ARENÁRIUS (*Sand Lyme-grass*).

DIVISION II. GYMNOSPERMS.

Having their seeds exposed, the carpels being either open so as not to form an ovary, or absent.

They have thus no style or stigma, the pollen-grains being carried directly into the micropyle of the ovule. This more lowly organised and, geologically speaking, more ancient Division of Flowering Plants is represented at the present day by far fewer forms than the Angiosperms; but falls into three very distinct classes, *Coníferæ*, *Cycadáceæ*, and *Gnetáceæ*, of which the first only is represented in Britain, the other two classes being either tropical or sub-tropical. The three classes comprise 5 Natural Orders, 46 genera, and 470 species.

Class I. CONÍFERÆ.

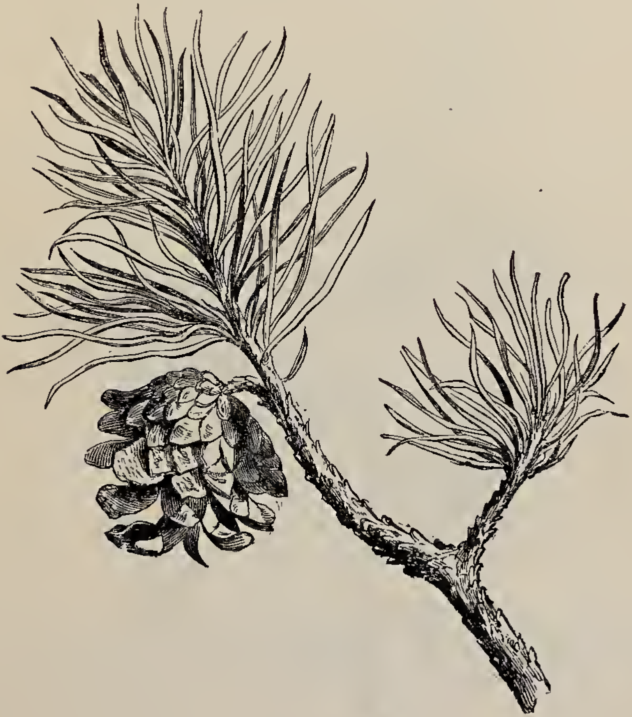
The largest of the three Classes of Gymnosperms, including 2 Natural Orders, 34 genera, and 350 species. They are trees or shrubs, mostly evergreen, often reaching a large or, as in the case of the Mammoth Tree and Redwood of California, a gigantic size. They have 2 *cotyledons*, sometimes deeply divided, so as to appear like many; and in the formation of annual rings of wood in the *stem* they resemble Dicotyledons. Resin-passages generally occur in all parts of these plants. The primary branches commonly appear to be whorled; but they generally themselves branch horizontally. There are sometimes short shoots or *spurs* of limited growth. In the genus *Pinus* *foliage-leaves* occur only on such shoots. The leaves are either needle-shaped, linear, or scale-like, the only exception being the interesting Maiden-hair Tree of Japan (*Gínkgo bilóba*). The *flowers* are generally in the form of cones, that is, with an elongated floral axis, whence the name of the Class; and they are always imperfect; nor is there any perianth. The *staminate flower* consists of a cone of *stamens*, each of which is a flat or peltate scale bearing from 2—9 *pollen-sacs* on its lower surface. The *seed-bearing* or "*fertile*" *flower* differs widely in the two Orders.

ORD. XCII. ARAUCARIÁCEÆ.—THE PINE FAMILY.

Leaves spirally arranged or whorled, needle-shaped or scale-like; *fertile flower*, generally described as a "cone" or axis, bearing a number of scale-like *carpels*, which either bear the ovules directly, or have in their axils other scales, the *placentas*, which bear them; *ovules* inverted or erect; *cone* becoming woody or fleshy as the *seed* ripens; *seed* with a woody or leathery *testa*, sometimes winged. The *Araucariáceæ* form extensive belts of forest in many regions, especially north of 40° N. lat. and on mountains, large areas being sometimes occupied by a small number of species, such as the Larches (*Lárix europǽa* and *L. sibírica*), the Northern Pine (*Pínus sylvéstris*), the Spruce (*Pícea excélsa*), &c. Japan and China, with the genera *Gínkgo, Cryptomeria*, &c., the Himalayas, with the Deodar Cedar (*Cédrus Deodára*) and various species of Pine and Spruce, and the Pacific slope of North America, with the Mammoth Tree and Redwood (*Sequóia gigántea* and *S. sempervírens*), the Oregon or Douglas Spruce (*Pseudotsúga Douglásii*), *Cupréssus Lawsoniána*, &c., form other great centres of the Order in the Northern Hemisphere; whilst *Araucária*, the "Monkey-Puzzles," and other genera are confined to the Southern Hemisphere.

The Order is one of the highest utility to man. Among timbers, the Northern Pine (*Pínus sylvéstris*), the Pitch Pine of the Southern United States (*P. austrális*) and others, the Larch (*Lárix europǽa*) and the Douglas Spruce may be mentioned as pre-eminent. The turpentine of the Northern Pine, the Pitch Pine, and the Cluster Pine (*P. Pináster*); Canada balsam, obtained from *Ábies balsámea*; Kauri gum and other kinds of Dammar or varnish resin, obtained from species of *Ágathis* in the Southern Hemisphere; the bark of the Hemlock Spruce (*Tsúga canadénsis*), so largely used in tanning; and the wood of the so-called Pencil Cedars (*Juníperus virginiána* and *J. bermudiána*) are among the other valuable products of the Order.

1. Pínus.—*Cone* woody; *scales* persistent.
2. Juníperus.—*Cone* fleshy, berry-like.



PÍNUS SYLVÉSTRIS (*Scots Fir*).

1. Pínus (Pine).—Evergreen trees with *leaves* of two kinds, spirally arranged, scale-leaves on the long shoots, and needle-shaped leaves in clusters of 2, 3 or 5 on short shoots; *flowers* monœcious; *staminate cones* in spikes; *stamens* 2-chambered; *pollen-grains* with two air-bladders; *cone-scales* becoming woody and

terminating above in a rhomboid mass (*apophysis*) with a deciduous point, persistent; *ovules* 2, inverted at the base of each scale. (Name, the Classical Latin name.)

1. *P. sylvéstris* (Scots Fir, Northern Pine).—A lofty tree, 50—100 feet high; *stem* reaching 4 feet in diameter, with scaly, red-brown bark; *leaves* in pairs, 2—3 in. long, glaucous, grooved along the upper surface; *cones* 1—3 together, ovoid-conical when young, 1—2 in. long, scales recurved when ripe; *seeds* with a

JUNÍPERUS COMMÚNIS (*Common Juniper*).

wing thrice their length.—Only indigenous in the Northern Highlands of Scotland; but extensively planted and self-sown farther south.—Fl. May, June. Perennial.

2.* *P. Pináster* (Cluster Pine), a native of Southern Europe, distinguished by its longer, more deeply channelled *leaves* and *cones* 4—6 in. long, in clusters of 4—7, has become almost naturalised at Poole, Dorsetshire.

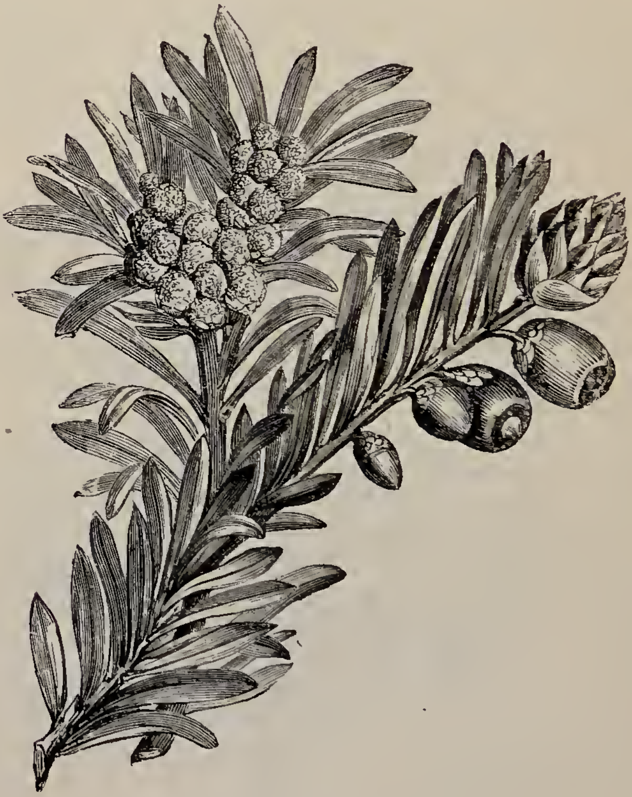
2. JUNÍPERUS (Juniper).—Trees or shrubs, with fragrant red wood; *leaves* whorled, subulate, or scale-like; *staminate flower* of numerous 2—6-chambered anthers; *cone* small, globose, berry-like, of 4—6 whorled scales, becoming fleshy and confluent; *ovules* 1 or 2 under each scale, erect. (Name, the Classical Latin name.)

1. *J. commúnis* (Common Juniper).—An evergreen, erect shrub, 1—5 feet high, rarely reaching the size of a small tree; *bark* red-brown, flaking; *leaves* subulate, less than an inch long, in decussating whorls of three, glaucous above; *berry* blue-black, glaucous, less than ½ in. diam.—Dry hills, chiefly on calcareous soil; frequent.—Fl. May, June. Perennial.

2. *J. nána* (Dwarf Juniper).—A prostrate shrub, with more crowded, shorter, broader, incurved *leaves* and longer *berries*.—Mountains in the north.—Fl. May. Perennial.

ORD. XCIII. TAXÁCEÆ.—THE YEW FAMILY.

A small Order of trees and shrubs, represented in both hemispheres and comprising 9 genera and about 75 species. Their *flowers* are diœcious and they do not form perfect *cones*, the *ovules* being frequently not on the carpels but in their axils, or the carpels being altogether absent. The *seed* has either a fleshy *testa*, or is surrounded by a fleshy *aril*. Several members of the Order yield valuable timber, such as the Huon Pine (*Dacrýdium Franklínii*) of Tasmania. The Yews (*Táxus*) are remarkable among Coníferæ for the absence of resin.



TÁXUS BACCÁTA (*Common Yew*).

1. TÁXUS, of which *T. baccáta* (Common Yew) is the only British species, is an evergreen tree, seldom of

any great height, but reaching a great age, probably sometimes 2,000 years, and a diameter of nearly 10 feet; *bark* brown, fibrous; *leaves* linear, acute, leathery, about 1 in. long, polished above, lighter beneath, in 2 rows on the twigs from a twisting of their bases; *staminate flower* oval, with 5—8 peltate *anthers* each 4—8-chambered, with imbricate scales below; *ovule* solitary, terminal, erect, green, with some scales below, surrounded later by a bright rose-red, fleshy, cup-shaped *aril*, about ½ in. across.—Woods and hill-sides, chiefly on calcareous soil; frequent. The wood was formerly much used for bows. The leaves have often proved fatal to cattle and children; but the aril, though insipid, is harmless. (Name, the Classical Latin name.)—Fl. March, April. Perennial.

* *T. fastigiáta* (the Irish or Florence Court Yew), originally found at Florence Court, Enniskillen, is a variety with erect, fastigiate branches.

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Avens, 212.
Awl wort, 71.
awn, a long bristle-like appendage, 826.
axil, iii.
axile-placentation, having the seeds attached to the central axis of the fruit.
axillary bud, iii.
Azalea, 458.

baccate, berry-like.
Bald-money, 318.
Bállota, 598.
Balm, 578.
Balm, Bastard, 585.
Balsam, 150.
Baneberry, 27
Barbaréa, 51.
Barberry, 28.
BARBERRY FAMILY, 28.
Barley, 827, 894.
Barrenwort, 29.
Bártsia, 541.
basal, applied to ovules or seeds that spring from the base of the ovary, xxiv.
basifixed anthers, xxiii.
Basil, 576.
bast, 138.
Beak Sedge, 799.
Beam, White, 232.
Bearberry, 451.
Beard-grass, 846.
Bear's-foot, 22.
Bedstraw, 343, 345.
BEDSTRAW FAMILY, 342.
Beech, 666, 674.
Beet, 612, 616.
Belladonna, 520, 524.
Bell-flower, 442.
BELL-FLOWER FAMILY, 435.
Béllis, 373.
Bent, 844.
BERBERÍDEÆ, 28.
Bérberis, 28.
Bermuda-grass, 861.
berry, xxvii.
Béta, 612, 616.
Betony, 588.
Betula, 666.
Bídens, 383.
bifid, notched, two-lobed.
bi-labiate calyx, xviii.
bi-labiate corolla, xx.
Bilberry, 446.
Bindweed, 515.
Bindweed, Black, 625.
BINDWEED FAMILY, 514.
bi pinnate leaf, vi.
Birch, 665, 666.
Bird's-eye, 550.
Bird's-foot, 187.
Bird's-foot Trefoil, 184.
Bird's-nest, 463.
BIRD'S-NEST FAMILY, 461.
Birthwort, 645.
BIRTHWORT FAMILY, 644.
Bishop's-weed, 304.
Bistort, 629.
Bittersweet, 522.
Blackberry, 208.
Blackstónia, 488.
Blackthorn, 202.
Bladder Campion, 102.
Bladder-seed, 291.
Bladderwort, 560.
Blinks, Water, 125.

Blite, Sea, 622.
Blobs, Water, 19.
Bluebell, 444, 737.
Blue-bottle, 413.
Bog-bean, 494.
Bog-rush, 800.
Borage, 502.
BORAGE FAMILY, 498.
BORAGÍNEÆ, 498.
Borágo, 502.
Borétta, 459.
Box, 654, 660.
Brachypódium, 888.
bract, xiii., xiv.
bracteoles, minute bracts below the flower.
Bramble, 208.
Brandy-bottle, 31.
Bread-fruit, 638.
Briar, Sweet, 228.
Bristle-grass, 833.
Bríza, 869.
Brome, False, 888.
Brome-grass, 882.
Brómus, 882.
Brooklime, 553.
Broom, 169.
Broom-rape, 554.
BROOM-RAPE FAMILY, 553.
Bryánthus, 459.
Bryónia, 276.
Bryony, Black, 723.
Bryony, White, 276.
Buck-bean, 494.
Buckthorn, 159.
BUCKTHORN FAMILY, 157.
Buckthorn, Sea, 637.
Buckwheat, 624, 625, 629.
Búda, 122.
Bugle, 600.
Bugloss, 505.
Bugloss, Viper's, 512.
bulb, iv.
Bullace, 203.
Bulrush, 746, 757, 785, 792.
Bupleúrum, 294.
Buplever, 294.
Burdock, 405.
Burnet, 224.
Burnet Saxifrage, 304.
Bur-Marigold, 383.
Bur-Parsley, 327.
Bur-reed, 757.
Búrsa, 72.
Burweed, 383.
Butcher's Broom, 726.
Bútomus, 770.
Butter-bur, 396.
Buttercup, 16.
BUTTERCUP FAMILY, 2.
Butterwort, 561.
BUTTERWORT FAMILY, 558.

Cabbage, 63.
CABBAGE FAMILY, 43.
caducous calyx, xviii.
Cakílé, 83.
Calamagróstis, 846.
Calamint, 576.
Calamíntha, 576.
Callítriché, 265.
Callúna, 452.
callus, a swelling overgrown with cork.
Cáltha, 19.
CALYCIFLORÆ, xli., 154.
calycifloral insertion, xviii.
calyx, xv., xviii., xix.
Campánula, 442.
CAMPANULÁCEÆ, 435.
campanulate, bell-shaped.
Campion, 105.
Canary-grass, 836.
Candleberry Myrtle, 664.
Candytuft, 79.
Canterbury Bells, 442.
capillary filaments, xxii.
capitate, head-like, clustered.
capitate stigma, 466.
CAPRIFOLIÁCEÆ, 333.
capsule, xxvi.
Caraway, 300.
Cardamíné, 55.
Cárduus, 406.
Cárex, 801.
Carlína, 402.
Carnation, 100.
Carnation-grass, 817.
carpellate flowers, xvi.
carpels, xxiii.–xxv.
Carpínus, 670.
carpophore, an elongated floral axis extending between the carpels, as in the Geránieæ, p. 142, and Umbellíferæ, p. 278.
Carrot, 325.
Cárum, 300.
CARYOPHYLLÁCEÆ, 96.
caryopsis, xxvi., 827.
Castália, 32.
Castánea, 674.
Castor-oil, 654.
casual, a plant not truly wild, that occurs occasionally as a seedling for a year or two, but does not become established.
Catabrósa, 866.
Catchfly, 102.
catkin, xiii.
Catmint, 581.

Cat’s-ear, 425.
Cat’s-foot, 378.
Cat’s-tail, 757.
Cat’s-tail grass, 842.
Caúcalis, 327.
cauline leaves, ix.
Cayenne pepper, 521.
Cedar, 898, 899.
Celandine, 19, 38.
CELASTRÍNEÆ, 155.
Celery, 297.
Centaúrea, 413
Centaury, 489.
central placentation, xxv.
Centúnculus, 478.
Century plant, 716.
Cephalánthera, 696.
Cerástium, 109.
CERATOPHÝLLEÆ. 661.
Ceratophyllum, 662.
Chærophyllum, 307.
Chaffweed, 478.
chambers of the ovary, xxiv.
Chamomile, 387, 392.
Charlock, 65, 66.
Charlock, White, 84.
Cheiránthus, 49.
Chelidónium, 38.
CHENOPODIÁCEÆ, 612.
Chenopódium, 613.
Cherry, 199, 202, 205.
Cherry, Cornelian, 331.
Cherry, Winter, 521.
Chervil, 307, 311.
Chestnut, 666, 674.
Chickweed, 113.
Chickweed, Jagged, 107.
Chickweed, Mouse-ear, 109.
Chicory, 415.
Chimney-sweeps, 755.
Chives, 732.
chlorophyll, the green colouring-matter of leaves.
Chrysánthemum, 389.
Chrysosplénium, 244.
Cicely, Sweet, 306.
Cicéndia, 491.
Cichórium, 415.
Cicúta, 299.
cilia, delicate hairs.
ciliate, fringed with hairs.
Cinchóna, 342.
Cinquefoil, 215.
CISTÍNEÆ, 87.
Circǽa, 273.
circinate, coiled up like a pastoral staff, as in the leaves of ferns.
Cládium, 800.
cladode, 726.
Clary, 579.
claw of petal, xix.
Claytónia, 124.
Cleavers, 347.
cleistogene flowers, these which do not open, 89.
Clématis, 4.
Cloudberry, 211.
Clove Gillyflower, 100.
Clover, 177.
Club-rush, 789.
Cnícus, 408.
cocci, or nutlets, portions of a partially dehiscent fruit, 133.
Cochleária, 68.
Cock’s-comb, 545.
Cock’s-foot grass, 827, 867.
Coffee, 342.
Cólchicum, 724, 742.
Cole-seed, 63.
Colocynth, 275.
Colt’s-foot, 396.
Columbine, 22.
Comfrey, 501.
commissure, 278.
complete flower, xvi.
COMPÓSITÆ, 361.
COMPOSITE FAMILY, 361.
compound flowers, xiv.
compound inflorescence, xiv.
compound leaf, xi.
conduplicate leaf, viii.
cone, 898.
CONÍFERÆ, lii., 897.
Conium, 293.
connate leaves, x.
connivent, with tips approaching one another.
Conopódium, 306.
contorted petals, xxii.
Convallária, 730.
convolute leaf, viii.
convolute petals, xxii.
CONVOLVULÁCEÆ, 514.
Convólvulus, 517.
Corallorhíza, 691.
Coral-root, 691.
cordate, heart-shaped, generally applied to the base of a leaf.
Cord-grass, 834.
Coriander, 325.
Coriándrum, 325.
cork, 665.
corm, iv.
CORNÁCEÆ, 331.
Corn-Cockle, 106.
Cornel, 332.
Cornflower, 413.
Corn Marigold, 389.
Corn-salad, 354.

Cornus, 332.
corolla, xv., xix.–xxi.
Corónopus, 73.
Corrigíola, 608.
Corydalis, 40.
Córylus, 671.
corymb, xiv.
corymbose, resembling a corymb.
Cotoneáster, 238.
Cotton, 132.
Cotton-grass, 798.
Cotton-weed, 386.
Cótula, 393.
Cotylédon, 249.
cotyledons, xxvii., 1.
Couch-grass, 890.
Cowbane, 299.
Cowberry, 446.
Cow-Parsnip, 323.
Cowslip, 469.
Cow-tree, 638.
Cow-wheat, 546.
Crab-weed, 621.
Crakeberry, 651.
Crámbé, 82.
Cranberry, 448.
CRANBERRY FAMILY, 445.
Crane's-bill, 143.
CRANE'S-BILL FAMILY, 142.
CRASSULÁCEÆ, 248.
Cratægus, 236.
Creeping Jenny, 474.
cremocarp, xxvii., 278.
crenate leaf, x.
Crépis, 420.
Cress, 75.
Cress, American, 53.
Cress, Bitter, 55, 57, 58.
Cress, Rock, 53.
Cress, Thale, 57, 60.
Cress, Wall, 60.
Cress, Winter, 51.
Cress, Yellow, 51.
Críthmum, 314.
Crócus, 713, 742.
Crosswort, 345.
Croton-oil, 654.
Crowberry, 651.
CROWBERRY FAMILY, 649.
Crowfoot, 13.
CRUCÍFERÆ, 43.
cruciform corolla, xix.
crumpled petals, xxii.
Cuckoo flower, 55, 56.
Cuckoo-pint, 761.
CUCKOO-PINT FAMILY, 759.
Cucumber, 276.
Cucurbitáceæ, 275.
Cudweed, 375.
cupule, xv., 665.
CUPULÍFERÆ, 664.
Currant, 246.
Cúscuta, 517.
Cut-grass, 835.
Cýclamen, 472.
cyme, xiv.
Cynoglóssum, 499.
Cynosúrus, 864.
CYPERÁCEÆ, 785.
Cypérus, 786.
Cyphel, Mossy, 119.
Cypripédium, 709
cypsela, xxvi.
Cýtisus, 169.

Dáctylis, 867.
Daffodil, 717.
Daisy, Common, 373.
Daisy, Moon, 390.
Daisy, Ox-eye, 390.
Damasónium, 769.
Dammar, 898.
Dandelion, 429.
Danewort, 338.
Dáphné, 636.
DAPHNE FAMILY, 634.
Darnel, 890.
Datúra, 524.
Daúcus, 325.
Dead-nettle, 593.
deciduous calyx, xviii.
deciduous leaves, xii.
decompound leaves, xi.
decumbent, prostrate.
decurrent, x.
decussate, applied to opposite or whorled leaves when the successive pairs are at right angles, or the successive whorls alternate.
Deer's-hair, 789.
deflexed, bent downwards.
Delphínium, 24.
deltoid leaf, ix., x.
dentate leaf, xi.
Deodar, 898.
Deschámpsia, 852.
descent, theory of, xxx.
diadelphous, in two brotherhoods or bundles, applied to the stamens, as in Fumariáceæ, 40.
Diánthus, 98.
dischasial cymes, cymes repeatedly forking into two branches.
dichotomous, forking in two equal branches.
dicotyledonous seed, xxvii.
DICOTYLÉDONS, xxxii., xxxviii., 1.

didynamous stamens, xxii.
Digitális, 527, 540.
diœcious flowers, xvi.
DIOSCÓREÆ, 721
Diótis, 386.
Diplotáxis, 65.
DIPSÁCEÆ, 356.
Dípsacus, 358.
disk. an outgrowth from the floral receptacle between the calyx and the ovary.
disk-florets, 362.
distant, far apart.
distichous, in two vertical rows, as are the leaves of Grasses.
Dittander, 75.
Doab-grass, 861.
Dock, 624, 630.
Dodder, 517.
Dog's-tail, 864.
Dog's-tooth grass, 860.
Dogwood, 159, 333.
DOGWOOD FAMILY, 331.
Doronícum, 398.
dorsifixed anthers, xxiii.
Drába, 67.
Dragon's Blood, 724.
Dropwort, 207.
Dropwort, Hemlock, 316.
Dropwort, Parsley, 316.
Dropwort, Sulphur-wort, 315.
Dropwort, Water-, 314.
Drósera, 256.
DROSERÁCEÆ, 255.
drupaceous, resembling a drupe.
drupe, xxvi.
drupel, xxvi.
Drýas, 212.
Duckweed, 764.
DUCKWEED FAMILY, 764.
Dyer's Rocket, 85.

ebracteate inflorescence, xiv.
Echium, 512.
eglandular, without glands.
ELÆAGNÁCEÆ, 636.
Elatíne, 127.
ELATÍNEÆ, 127.
Elder, 335.
Elder, Water, 339.
Elecampane, 380
Eleócharis, 788.
Elísma, 767.
Elm, 638, 639.
Elodéa, 683.
Elymus, 895.
emarginate, notched at the apex.
embryo, the young plant when still enclosed in the seed.
EMPETRÁCEÆ, 649.
Empètrum, 651.
Enchanter's Nightshade, 273.
endocarp, the inner layer or "stone" in a fruit, 199.
entire leaf, x.
epicalyx, a circle of bracts below the calyx.
epicarp, the outer layer or "skin" in a fruit, 199.
epigynous insertion, xviii.
Epilóbium, 268.
Epimédium, 29.
Epipáctis, 697.
epipetalous stamens, xxii.
epiphytes, 687.
Epipógum, 696.
Eránthis, 22.
Eríca, 454.
ERICÁCEÆ, 448.
Erígeron, 375.
ERIOCAÚLEÆ, 784.
Eriocaúlon, 784.
Eriòphorum, 798.
Eródium, 147.
Eròphila, 68.
Eryngium, 289.
Eryngo, 289.
Erýsimum, 62.
Erythræa, 489.
Esparto-grass, 828.
essential organs, xv.
etærio, xxvi.
Euónymus, 157.
Eupatórium, 371.
Euphórbia, 652, 654.
EUPHORBIÁCEÆ, 651.
Euphrásia, 540.
evergreen leaves, xii.
Everlasting, 377, 378.
exogenous, 1.
expelling hairs, 363.
exserted, projecting beyond the corolla, a term applied to the stamens.
extrorse anthers, xxiii.
Eye-bright, 527, 540.

Fagopýrum, 629.
Fágus, 674.
Falcária, 302.
falcate, sickle-shaped.
fascicled, crowded in a tuft, as the leaves of the Larch or the flowers of Sweet William.
fasciculate roots, iii.
Fat Hen, 614.
Fennel, 312.
Fennel, Hog's, 322.
Fen Sedge, 800.

Fenugreek, 172.
Férula, 281.
Fescue, 877.
Festúca, 877.
Feverfew, 390.
Fibíchia, 860.
Fig, 638.
Figwort, 535.
FIGWORT FAMILY, 526.
Filágo, 375.
filament, xxii.
filiform, thread-like, very slender.
Fiorin-grass, 845.
Fir-rape, 463.
Fir, Scots, 900.
fistular stems, iv.
Flag, Corn, 711.
Flax, 139.
FLAX FAMILY, 139.
Flax, New Zealand, 724.
Flax-seed, 140.
Flea-bane, 375, 331.
Fleawort, 402.
flexuous, wavy, less angular than is implied by the term "zigzag."
Flixweed, 61.
florets, xiv.
Flote-grass, 874.
flower, xv.
Flower-de-luce, 710.
flower-stalk, xiii.
Fluellen, 532.
Fœnículum, 312.
follicle, xxvi.
footstalk, xiii.
Forget-me-not, 498 503.
Foxglove, 527, 540.
Foxtail-grass, 839.
Fragária, 213.
Frankénia, 96.
FRANKENIÁCEÆ, 96.
Fráxinus, 481.
free-central placentation, having the seeds attached to the central axis of the fruit without partitions connecting that axis with the side-walls of the ovary, xxiv.
Fritillária, 739.
Fritillary, 739.
Frog-bit, 684.
FROG-BIT FAMILY, 683.
fruit, xxv.
fugacious corolla, xxi.
Fumária, 41.
FUMARIÁCEÆ, 40.
Fumitory, 41.
FUMITORY FAMILY, 40.
Furze, 168.
fusiform, spindle-shaped, tapering towards both ends.

Gágea, 741.
Galánthus, 719.
Galeópsis, 590.
Galingale, 786.
Galinsóga, 385.
Gálium, 345.
GAMOPÉTALÆ, xliv., 333.
gamosepalous calyx, xviii.
Gangweed, 93.
Garlic, 724, 731.
Garlic Mustard, 62.
Gastrídium, 848.
Gean, 205.
Genísta, 166.
Gentian, 491.
Gentiána, 491.
GENTIÁNEÆ, 486.
Gentianella, 488, 491.
GENTIAN FAMILY, 486.
generic name, xxviii.
genus, xxix.
GERANIÁCEÆ, 142.
Geránium, 143.
Germander, 598.
Géum, 212.
Gínkgo, 897.
Gipsywort, 572.
glabrescent, becoming smooth.
glabrous surface, xii.
Gladden, 710.
Gládiolus, 715.
glands, small internal hollows in the tissues of plants containing special secretions such as oils.
glandular surface, xii.
Glasswort, 621.
Glaúcium, 38.
glaucous surface, xii.
Glaux, 476.
Globe-flower, 19.
glomerules, axillary cymes with sessile or nearly sessile flowers.
glumaceous, resembling a glume.
glume, a stiff bract drying into a chaff-like scale, as in Grasses, 784.
Glume, Flowering, 825.
GLUMÍFERÆ, lii., 784.
Glycéria, 874.
Gnaphálium, 379.
Goat's-beard, 435.
Golden-rod, 372.
Goldilocks, 15.
Goldilocks, Flax-leaved, 374.

Gold of Pleasure, 71.
Good Friday grass, 755.
Good King Henry, 616.
Goodyéra, 696.
Gooseberry, 247.
Goosefoot, 613.
GOOSEFOOT FAMILY, 612.
Goose-grass, 219, 347.
Gorse, 168.
GOURD FAMILY, 275.
Gout-weed, 303.
GRAMÍNEÆ, 825.
Grass, Black, 839.
Grass, Blue-eyed, 713.
Grass-cloth, 638.
GRASS FAMILY, 825.
Grass of Parnassus, 246.
Grass-wrack, 783.
Green-weed, 166.
Gromwell, 511.
Gromwell, Smooth, 507.
Ground Ivy, 582.
Ground Pine, 602.
Groundsel, 399.
Guelder Rose, 338.
Guinea-corn, 828.
Gum Arabic, 164.
GYMNOSPÉRMIA, xxvii., xxxii., lii., 896.
  gynandrous stamens, xxi.

Habenária, 707.
Hair-grass, 851, 864.
  hairs, xii.
Hard-grass, 893.
Hard-head, 413.
Harebell, 444.
Hare's-ear, 295.
Hare's-tail grass, 850.
Hartwort, 325.
  hastate, halberd-shaped, x.
HALORÁGEÆ, 261.
Havers, 858.
Hawk-bit, 427.
Hawk's-beard, 420.
Hawkweed, 422.
Hawthorn, 236.
Hazel, 671.
  head, xiv.
Heartsease, 92.
Heath, 454.
Heather, 452.
HEATH FAMILY, 448.
Heath-grass, 862.
Heath, St. Dabeoc's, 459.
Hédera, 329.
Hedge-mustard, 59.
Heliánthemum, 87.
Heliotrope, Winter, 398.
Hellebore, 20.
Helleborine, 696.
Helléborus, 20.
Hemlock, 280, 293, 299.
Hemlock Spruce, 898.
Hemlock, Water, 299.
Hemp, 638.
Hemp Agrimony, 371.
Hemp-nettle, 590.
Henbane, 521, 525.
Henbit-nettle, 594.
Herácleum, 323.
  herbaceous, when applied to stems meaning not woody; when to leaves or other organs, green and leaf-like.
Herb Benet, 212.
Herb Christopher, 27.
Herb Gerard, 304.
Herb Paris, 745.
Herb Robert, 147.
Hermínium, 705.
Herniária, 608.
Hésperis, 58.
  heterostyly, 469.
Hierácium, 422.
Hierochloé, 838.
Hippocrépis, 190.
Hippóphaé, 637.
Hippúris, 263.
  hispid, with short stiff hairs.
Hog's-Fennel, 322.
Hog-weed, 324.
Hólcus, 853.
Holly, 154.
HOLLY FAMILY, 152.
Hollyhock, 133.
Holly, Sea, 289.
Holósteum, 107.
Holy-grass, 838.
Homalocénchrus, 835.
Honewort, 296.
Honeysuckle, 340.
HONEYSUCKLE FAMILY, 333.
Hop, 638, 640.
Hórdeum, 894.
Horehound, Black, 598.
Horehound, White, 586.
Hornbeam, 665, 670.
Hornwort, 662.
HORNWORT FAMILY, 661.
Horse-radish, 71.
Horseshoe-vetch, 190.
Hottónia, 468.
Hound's-tongue, 499.
House-leek, 255.
Hutchínsia, 80.
Hyacinth, Grape, 734.
Hyacinth, Starch, 734.
Hyacinth, Wild, 737.
HYDROCHARÍDEÆ, 683.

Hydrócharis, 684.
Hydrocótylé, 287.
Hyoscyamus, 525.
HYPERICÍNEÆ, 128.
Hypéricum, 128.
Hypochæris, 425.
hypogynous insertion, xvii.
Hypópitys, 463.

Ibéris, 79.
Ilex, 154.
ILICÍNEÆ, 152.
ILLECEBRÁCEÆ, 606.
Illécebrum, 607.
imbricate leaves, viii.
imbricate sepals, xxi.
imparipinnate, pinnate with a terminal leaflet.
Impátiens, 150.
imperfect flowers, xvi.
included, within the flower, generally applied to the stamens.
INCOMPLÉTÆ, xlvii., 610.
incomplete flower, xvi.
incumbent cotyledons, 44.
indehiscent fruit, xxv.
Indiarubber, 484.
indigenous, native to the country, not known to be of human or recent introduction.
inferior calyx, xvii., xviii.
inferior ovary, xviii., xxiv.
inflated calyx, xviii.
inflorescence, xii.
insertion of the flower, xvii.
internode, iii.
interruptedly pinnate, leaves in which alternate pairs of leaflets are large and small, as in Agrimony, 223.
introrse anthers, xxiii.
Ínula, 380.
involucel, a secondary involucre or circle of bracts on the branches of a compound inflorescence, 356.
involucre, xiv.
involute leaf, viii.
Ipecacuanha, 342.
IRÍDEÆ, 709.
Íris, 710.
IRIS FAMILY, 709.
Ísatis, 81.
Isnardia, 271.
Ivy, 329.
IVY FAMILY, 329.

Jacob's Ladder, 496.
JACOB'S LADDER FAMILY, 496.
Jalap, 514.
Jasíoné, 438.
Jerusalem Artichoke, 364.
Joint-vetch, 189.
Jujube, 157.
JUNCÁCEÆ, 746.
Juncoídes, 753.
Júncus, 747.
Juniper, 901.
Juníperus, 901.
Jute, 138.

Kauri pine, 898.
keel, the two lower petals in the flowers of the Pea Family, xx.
Kidney-Vetch, 183.
Knapweed, 413.
Knawel, 609.
Knot-grass, 607, 626.
KNOT-GRASS FAMILY, 606.
Kobrésia, 801.
Koeléria, 864.

labellum, 688.
LABIÁTÆ, 565.
Lace-bark, 635.
Lactúca, 430.
Lady's Fingers, 184.
Lady's Mantle, 221.
Lady's Slipper, 709.
Lady's Smock, 55, 56.
Lady's Tresses, 694.
Lagúrus, 850.
Lamb's Lettuce, 354.
Lamb's-tongue, 603.
Lámium, 593.
lanceolate leaf, ix.
Lapsána, 418.
Larch, 898.
Larkspur, 24.
Lathræa, 557.
Láthyrus, 195.
latisept siliqua, 44.
Laurel, Spurge, 636.
Lavatéra, 135.
Lavender, 655.
leaf, viii.-xii.
Leek, 724, 731.
legume, xxvi.
LEGUMINÓSÆ, 162.
Lémna, 764.
LEMNÁCEÆ, 764.
Lemon-plant, 563.
LENTIBULARIÉÆ, 558.
Leóntodon, 427.
Leonúrus, 592.
Leopard's-bane, 398.
Lepídium, 75.
Leptúrus, 893.
Lettuce, 430.

Leucójum, 721.
Lightwort, 507.
ligulate corolla, xx., xxi.
ligule, a small scale at the base of a leaf, as in Grasses, 825, or of a petal, as in the Mignonettes and Campions.
LIGULIFLÓRÆ, 364.
Ligústicum, 320.
Ligústrum, 482.
Lilac, 481.
LILIÁCEÆ, 723.
Lílium, 739.
Lily, 739.
LILY FAMILY, 723.
Lily-of-the-Valley, 730.
limb of petal, xix.
Limnánthemum, 496.
Limosélla, 537.
Linária, 530.
Linden, 138.
LINDEN FAMILY, 137.
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Ling, 452.
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Linnæan system, xxx., xxxi.
Linseed, 140.
Línum, 140.
Líparis, 691.
Liquorice, Wild, 171.
Lístera, 694.
Lithospérmum, 511.
Littorélla, 606.
Llóydia, 741.
lobed leaf, xi.
Lobélia, 438.
Locust Beans, 164.
lodicule, 826.
Loiseleúria, 458.
Lólium, 888.
lomentum, a pod-like fruit with transverse partitions, 44, 47.
London Pride,
Lonicéra, 340.
Loosestrife, 473.
LOOSESTRIFE FAMILY, 258
Loosestrife, Purple, 259.
Lop-grass, 886.
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Lords-and-Ladies, 762.
Lótus, 184.
Lovage, 320.
Lucerne, 173.
Ludwígia, 271.
Lungwort, 507.
Lýchnis, 105.
Lýcium, 524.
Lycópsis, 505.
Lýcopus, 572.
Lyme-grass, 895.
lyrate leaf, xi.
Lysimáchia, 473.
LYTHRARIÉÆ, 258.
Lýthrum, 259.

Madder, 343.
Madder, Field, 350.
Maiánthemum, 730.
Maidenhair tree, 897.
Maize, 825, 827.
Maláxis, 691.
Mallow, 135.
MALLOW FAMILY, 132.
Mallow, Marsh, 133.
Mallow, Tree-, 135.
Málva, 135.
MALVÁCEÆ, 132.
Manchineel, 653.
Mandrake, 520.
Mangold Wurzel, 612.
Manioc, 653.
Manna, 481.
Manna-croup, 874.
Manna-grass, 874.
Maple, 161.
MAPLE FAMILY, 159.
marcescent, withering but remaining attached, xix.
Mare's-tail, 263.
MARE'S-TAIL FAMILY, 621.
Mariána, 411.
Marigold, Corn, 389.
Marigold, Marsh, 19.
Marjoram, 574.
Marram, Sea, 850.
Marrúbium, 586.
Marsh-wort, 298.
MAST-BEARING FAMILY, 661.
Masterwort, 323.
Maté Tea, 153.
Matfellon, 413.
Mat-grass, 850, 893.
Mathíola, 47.
Matricária, 390.
May, 237.
May-Lily, 730.
May-weed, 391.
Meadow-grass, 871.
Meadow-rue, 4.
Meadow-sweet, 206.
Meconópsis, 172.
Medicágo, 172.
Medick, 172.
Medlar, 236.
Melampyrum, 546.
Melic, 864, 867.
Melica, 867.
Melilot, 175.
Melilótus, 175.
Melissa, 578.

Melíttis, 585.
membranous leaf, viii.
Méntha, 568.
Menthol, 565.
Menyánthes, 494.
Menziesia, 459.
Mercuriális, 661.
Mercury, 616, 661.
mericarp, 279.
mesocarp, the middle layer or "flesh" of a fruit, 199.
Meu, 318.
Méum, 318.
Mezereon, 636.
Mibóra, 844.
Microcála, 488.
Mignonette, 85.
MIGNONETTE FAMILY, 85.
Milfoil, Common, 386.
Milfoil, Water, 263.
Mílium, 842.
Milk-vetch, 186.
Milkwort, 93.
MILKWORT FAMILY, 93.
Millet, 827, 833.
Millet, Grey, 511.
Millet-grass, 842.
Mímulus, 537.
Mint, 568.
Mistletoe, 646.
MISTLETOE FAMILY, 646.
Mœnchia, 109.
Molínia, 864.
Money-wort, 474.
Money-wort, Cornish, 538.
Monkey-flower, 537.
Monkey-puzzles, 898.
Monk's-hood, 25.
monadelphous stamens, xxii.
Monéses, 461.
monocarpellary fruits, xxvi.
MONOCHLAMÝDEÆ, xlvii., 611.
monochlamydeous flowers, xvi.
monocotyledonous seed, xxvii.
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monosymmetric flowers, xvii.
MONOTRÓPEÆ, 461.
Móntia, 124.
Moor-grass, 862.
Moschatel, 334.
Moss Campion, 104.
Mother-of-thousands, 531.
Motherwort, 592.
Mountain Ash, 234.
Mouse-ear, 507.
Mouse-tail, 10.
mucro, 93.
Mud-rush, 791.
Mudwort, 537.
Mugwort, 395.
Mulberry, 638.
Mullein, 528.
Muscári, 734.
Mustard, 65, 66.
Mustard, Garlic, 62.
Mustard, Mithridate, 78.
Mustard, Tower, 55.
Myosótis, 507.
Myosúrus, 10.
Myrica, 664.
MYRICÁCEÆ, 664.
Myriophyllum, 263.
Mýrrhis, 306.
Myrtle, Bog, 664.

NAIADÁCEÆ, 770.
Nájas, 783.
Narcíssus, 717.
Nárdus, 893.
Narthécium, 744
Nastúrtium, 50.
Natural Orders, xxxi., xxxviii.–lii.
natural system, xxx.–xxxi.
naturalised, growing freely from self-sown seed, though not truly indigenous.
Navew, 63, 64.
Néckera, 40.
nectary, any organ secreting honey, generally part of the flower.
Neóttia, 693.
Népeta, 581.
Nettle, 642.
Nettle, Dead, 593.
NETTLE FAMILY, 637.
neuter flowers, xvi.
Nightshade, 520, 521, 524.
NIGHTSHADE FAMILY, 519.
Nipplewort, 418.
Nit-grass, 848.
node, iii.
nodulose roots, iii.
Nonsuch, 173.
nut, xxvii.
nutlets, xxv.
Nymphæa, 30.
NYMPHÆÁCEÆ, 30.

Oak, 672.
Oat, 827, 856.
Oat, False, 859.
Oat-grass, 859.
Oat, Yellow, 856.
obconic, reversedly cone-shaped.
oblanceolate leaf, ix.
oblique leaf, x.
obovate leaf, ix.
obovoid, nearly reversedly egg-shaped.

Œnánthé, 314.
Œnothéra, 272.
offset, viii.
OLEÁCEÆ, 480.
Oleander, 484.
OLEASTER FAMILY, 636.
OLIVE FAMILY, 480.
ONAGRARIÉÆ, 267.
Onóbrychis, 190.
Onónis, 171.
Onópordon, 410.
Óphrys, 703.
opposite leaves, ix.
Orache, 618.
orbicular, nearly round, applied to leaves.
ORCHÍDEÆ, 687.
ORCHID FAMILY, 687.
Órchis, 691, 698.
organ, any part of a plant which performs some definite function.
Oríganum, 574.
Ornithógalum, 737.
Orníthopus, 187.
OROBANCHÁCEÆ, 553.
Orobánché, 554.
Orpine, 252.
Orris-root, 709.
Osiers, 675, 678.
ovary, xxiv., xxv.
ovate leaf, ix.
ovoid, nearly egg-shaped.
ovules, xxiv., xxv.
Óxalis, 150.
Ox-eye, 389.
Ox-lip, 472.
Ox-tongue, 419.
Oxýria, 630.
Oxýtropis, 186.

Pæónia, 27.
Paigle, 472.
pale, 826.
palmate leaf, xi.
palmate venation, ix.
palmatisect, cut in a palmate manner, xi.
Panic, 833.
panicle, a branched cluster of flowers.
Pánicum, 833.
Pansy, 92.
Papáver, 34.
PAPAVERÁCEÆ, 33.
papilionaceous corolla, xix.
pappose, in the form of a pappus or circle of hairs.
pappus, xviii.
parasite, a plant which is attached to, and derives its food from, another living being, as does the Mistletoe. They are often brown, as are the Broom-rapes.
parietal placentation, xxv.
Parietária, 644.
Páris, 745.
Parnássia, 246.
Parsley, 301.
Parsley, Beaked, 311.
Parsley, Bur-, 327.
Parsley, False Milk, 320.
PARSLEY FAMILY, 278.
Parsley, Fool's, 316.
Parsley, Hedge-, 327.
Parsley, Milk, 323.
Parsley, Piert, 221.
Parsley, Stone, 301.
Parsnip, 323.
Parsnip, Cow, 323.
Parsnip, Water, 302.
Pasque-flower, 8.
Patchouli, 565.
Pea, Everlasting, 197.
PEA FAMILY, 162.
Pear, 235.
Pearl-wort, 119.
Peas Earth-nut, 197.
pedate, with lateral lobes given off from one another in a cymose manner.
pedicel, xiii.
Pediculáris, 543.
peduncle, xii.
Pellitory, 644.
peltate leaf, x.
Penny Cress, 78.
Pennyroyal, 572.
Pennywort, Marsh, 287.
Pennywort, Wall, 250.
pentamerous (often written 5-merous) having 5 leaves in each whorl.
Peony, 27.
Péplis, 258.
Pepper, Cayenne, 521.
Peppermint, 570.
Pepperwort, 75.
perennials, herbaceous, v.
perfect flower, xvi.
perfoliate leaf, x.
perianth, xv.
perigynous insertion, xvii.
Periwinkle, 484.
PERIWINKLE FAMILY, 484.
Persicaria, 624.
PERSICARIA FAMILY, 623.
persistent calyx, xviii., xix.
persistent corolla, xxi.

personate corolla, xxi.
petaloid bracts, xiv.
petaloid calyx, xviii.
petaloid filaments, xxiii.
PETALOÍDEÆ, l., 683.
petals, xv., xix.–xxi.
Petasítes, 396.
petiole, the stalk of the leaf.
Peucédanum, 322.
Phálaris, 836.
PHANEROGÁMIA, xxxii., xxxviii.
Pheasant's-eye, 10.
Phléum, 842.
Phlóx, 496.
Phragmítes, 862.
phyllodes, leaf-stalks so flattened as to resemble leaf-blades, 195.
Physospérmum, 291.
Phyteúma, 441.
Pícris, 419.
Pig-nut, 306.
pilose, hairy, 363.
Pimpernel, 477.
Pimpernel, Bastard, 478.
Pimpernel, Yellow, 475.
Pimpinélla, 304.
Pine, 899.
PINE FAMILY, 898.
Pine, Ground, 602.
Pinguícula, 561.
Pink, 96.
PINK FAMILY, 96.
pinuate leaf, xi.
pinnate venation, ix.
pinnatifid, slightly pinnately cut.
Pínus, 899.
Pipewort, 784.
PIPEWORT FAMILY, 784.
placenta, xxiv.
placentation, xxiv., xxv.
plaited calyx, xviii.
plaited leaf, viii.
PLANTAGÍNEÆ, 602.
Plantágo, 603.
Plantain, 603.
PLANTAIN FAMILY, 602.
Plum, 202, 204.
PLUMBAGÍNEÆ, 463.
plumose, feathery, 363.
plumule, 1.
Pneumária, 507.
Póa, 871.
pod, xxvi.
POLEMONIÁCEÆ, 496.
Polemónium, 496
pollen, xxii.
pollinia, 688.
polyadelphous stamens, xxii.
polycarpellary fruits, xxvi.
Polycárpon, 123.
Polýgala, 93.
POLYGALÁCEÆ, 93.
POLYGONÁCEÆ, 623.
Polygonátum, 730.
Polýgonum, 624.
POLYPÉTALÆ, xxxviii., 2.
polypetalous corolla, xix.
Polypógon, 846.
polysepalous calyx, xviii.
polysymmetric flowers, xvii.
pome, xxvii.
Pond-weed, 773.
POND-WEED FAMILY, 770.
Poplar, 680.
Poppy, 34.
POPPY FAMILY, 33.
Poppy, Horned, 38.
Poppy, Violet Horned, 38.
Poppy, Welsh, 37.
Pópulus, 680.
PORTULACEÆ, 123.
Potato, 519.
Potato, Sweet, 515.
Potentílla, 215.
Potérium, 224.
premorse rhizome, v.
Primrose, 469.
Primrose, Evening, 272.
PRIMROSE FAMILY, 466.
Prímula, 469.
PRIMULACEÆ, 466.
Privet, 483.
Prunélla, 584.
Prúnus, 202.
pseudobulbs, 687.
Pulicária, 381.
Pulmonária, 507.
Pulqué, 716.
Purslane, 123.
PURSLANE FAMILY, 123.
Purslane, Sea, 118, 621.
Purslane, Water, 258.
Pýrola, 459.
Pýrus, 231.

Quaking-grass, 869.
Quércus, 672.
quinate leaf, xi.
Quinsy-wort, 350.

raceme, xiii.
rachilla, 825.
radical leaves, ix.
radicle, 1.
Rádiola, 140.
Radish, 84.
Ragged Robin, 105.
Ragwort, 400.
Rampions, 436, 441, 444.
Ramsons, 734.

RANUNCULÁCEÆ, 2.
Ranúnculus, 13.
Rape, 63.
Ráphanus, 84.
  raphides, 760.
Raspberry, 208.
  ray-florets, 362.
  receptacle, xv., xvii., xviii.
  receptacle, common, xiv., 362.
  receptacular tube, xvii., xviii.
Red-rattle, 543.
Reed-grass, 836.
Reed-mace, 757.
REED FAMILY, 755.
Reed, Small, 846.
  regma, xxvi.
  reniform, kidney-shaped, applied to leaves, ix.
  replum, xxv.
Reséda, 85.
RESEDÁCEÆ, 85.
Rest-harrow, 171.
  resupinate, reversed, hanging downwards, 182.
  retinaculum, 688.
  revolute leaf, viii.
RHÁMNEÆ, 157.
Rhámnus, 159.
Rhinánthus, 545.
  rhizome, v.
  rhomboid leaf, x.
Rhubarb, 623.
Rhubarb, Monk's, 634.
Rhynchóspora, 799.
Ríbes, 246.
Rice, 827.
  ringent corolla, xx., xxi.
Rocket, 65.
Rocket, London, 62.
Rocket, Sea, 83.
Rock-rose, 87.
ROCK-ROSE FAMILY, 87.
Rœméria, 38.
Romuléa, 713.
  root, ii., iii.
  root-hairs, iii.
  root-stock, v.
Rósa, 226.
ROSÁCEÆ, 199.
Rose, 226.
Rose-bag, 269.
ROSE FAMILY, 199.
Rosemary, 566.
Rose-root, 251.
Rosewood, 163.
  rosulate, in a rosette, applied to leaves.
  rotate corolla, xx.
Rowan, 234.
Rúbia, 343.
RUBIÁCEÆ, 342.
Rúbus, 208.
Rúmex, 630.
  ruminate, 329.
  runcinate, 60.
  runner, vii.
Rúppia, 780.
Rupture-wort, 608.
Rúscus, 726.
Rush, 747.
RUSH FAMILY, 746.
Rush, flowering, 770.
Rye, 827.
Rye-grass, 827, 888.

Safflower, 365.
Saffron, 710, 742.
Sage, 579.
Sage, Wood, 600.
Sagína, 119.
Sagittária, 768.
  sagittate, barbed like an arrow at the base, applied to leaves.
Sainfoin, 190.
SALICÍNEÆ, 675.
Salicórnia, 621.
Sálix, 676.
Sallow, 679.
Salsafy, 365, 435.
Sálsola, 622.
Saltwort, 622.
  salver-shaped corolla, xx.
Sálvia, 566, 579.
  samara, xxvi.
Sambúcus, 335.
Sámolus, 480.
Samphire, 281.
Samphire, Golden, 380.
Samphire, Marsh, 621.
Samphire, Rock, 314.
SANDALWOOD FAMILY, 648.
Sand-grass, 844.
Sandwort, 115.
Sandwort-Spurrey, 122.
Sanicle, 289.
Sanícula, 289.
SANTALÁCEÆ, 648.
Saponária, 101.
  saprophyte, a plant living on decaying organic matter, such as dead leaves or manure. They are often brown, as is the Bird's-nest (p 463).
Satin-flower, 114.
Saussúrea, 411.
Saw-wort, 411.
Saxífraga, 240.
Saxifrage, 240.
Saxifrage, Burnet, 304.
SAXIFRAGE FAMILY, 239.

Saxifrage, Golden, 244.
Saxifrage, Meadow, 311.
Saxifrage, Pepper, 318.
SAXIFRAGEÆ, 239.
Scabiósa, 359.
Scabious, 359.
Scabious, Sheep's, 433.
Scammony, 514.
Scándix, 309.
  scape, xiii.
  scattered leaves, ix.
Scheuchzéria, 773.
Schœnus, 800.
Schóllera, 448.
Scírpus, 789.
Scleránthus, 609.
Scorpion-grass, 507.
Scorzonéra, 365.
Scrophulária, 535.
SCROPHULARÍNÆ, 526.
Scurvy-grass, 68.
Scutellária, 582.
Sea-Campion, 102.
Sea-Heath, 96.
SEA-HEATH FAMILY, 96.
Sea-kale, 82.
Sea-Lavender, 464.
Sea-Milkwort, 476.
Sea-Pink, 466.
Sedge, 801.
SEDGE FAMILY, 785.
Sedge, Sweet, 760, 763.
Sédum, 251.
  seeds, xxvii.
Self-heal, 584.
Selínum, 320.
Sempervívum, 255.
Senécio, 398.
  sepals, xv., xviii., xix.
  septum, a partition.
  serrate leaf, xi.
Serrátula, 411.
Service-tree, 231, 234.
Séseli, 311.
Sesléria, 862.
  sessile anthers, xxiii.
  sessile leaf, viii.
Setária, 833.
Setterwort, 22.
Sheep's-bit, 438.
Shepherd's Needle, 309
Shepherd's Purse, 72.
Shepherd's Rod, 358.
Sherárdia, 350.
Shore-weed, 606.
  shrub, v.
Shrubby Rocket, 86.
Sibbaldia, 220.
Sibthórpia, 538.
Sieglíngia, 862.
Siláus, 318.
Siléné, 102.
Síler, 317.
  silicle, 44.
  siliqua, xxvi., 44.
Silver-weed, 219.
Simethis, 731.
  simple leaf, xi.
Síson, 301.
Sisymbrium, 59.
Sisyrínchium, 713.
Síum, 302.
Skull-cap, 582.
  sleep of plants, .63.
Sloe, 202.
Smallage, 297.
Smýrnium, 294.
Snake's-head, 739.
Snake-root, 629.
Snakeweed, 629.
Snapdragon, 533.
Sneezewort, 386.
Snowdrop, 719.
Snowflake, 721.
Soapwort, 101.
Soft-grass, 853.
SOLANÁCEÆ, 519.
Solánum, 521.
Solidágo, 372.
Solomon's Seal, 730.
Sorrel, 624, 630, 634.
Sorrel, Mountain, 630.
Sowbane, 614.
Sow-bread, 472.
Sow-thistle, 432.
Sow-thistle, Blue, 432.
  spadix, xiii., 759.
Spargánium, 757.
Spartína, 834.
  spathe, a large sheathing bract, such as the brown membranous one enclosing the flower of the Daffodil, or the pale green one enclosing the spadix of the Lords-and-Ladies, 759.
  spathulate, spoon-shaped.
Spearwort, 15.
  species, xxviii.
  specific name, xxviii.
Speculária, 445.
Speedwell, 548.
Spérgula, 122.
SPERMAPHÝTA, xxxii., xxxviii.
Spiderwort, 741.
Spignel, 318.
  spike, xiii.
  spike, compound, xiv.
Spikenard, 351.
Spikenard, Ploughman's, 380.
Spike-rush, 788.

Spinach, 612.
Spindle-tree, 157.
SPINDLE-TREE FAMILY, 155.
spinescent stem, vii.
Spiræa, 206.
Spiranthes, 694.
Spruce, 898.
Spurge, 652, 654.
SPURGE FAMILY, 651.
Spurge Laurel, 636.
Spurrey, 121, 122.
Spurrey, Sandwort, 122.
Squills, 724, 734.
Squirrel-tail Grass, 895.
sub-, partly.
subulate, awl-shaped, slender, and tapering, as in the prickles of the Gorse.
subulate filaments, xxii.
sucker, v.
Stáchys, 588.
stamens, xxii., xxiii.
staminate flowers, xvi.
staminode, an aborted stamen, not containing pollen.
standard petal, xx.
Star-fruit, 769.
Star-of-Bethlehem, 737, 741.
Star-thistle, 415.
Starwort, Sea, 373.
Starwort, Water, 265.
Státicé, 464.
Stellária, 112.
stellate, star-shaped, applied to hairs.
stem, iii.–viii.
stigma, xxiv.
stipules, viii.
stipules, interpetiolar, 342.
Stitchwort, 112.
St. John's-wort, 128.
ST. JOHN'S-WORT FAMILY, 128.
Stock, 47.
stoloniferous, with stolons or runners.
Stonecrop, 251.
STONECROP FAMILY, 248.
Stonewort, 302.
Stork's-bill, 147.
Strapwort, 608.
Stratiótes, 686.
Strawberry, 213, 215.
Strawberry-tree, 450.
styles, xxiv.
Suǽda, 622.
Subulária, 71.
Succory, 415.
Succory, Lamb's, 417.
Succory, Swine's, 417.
Sugar-cane, 825, 828.
Sulphur-wort, 318, 323.
Sundew, 256.
SUNDEW FAMILY, 255.
superficial ovules, xxiv.
superior calyx, xviii.
superior carpels, xvii.
superior ovary, xxiv.
Swede, 63.
Sweet Gale, 664.
SWEET GALE FAMILY, 664.
Swine's-cress, 74.
Sycamore, 161.
Sýmphytum, 501.
sympodial, a term applied to inflorescences in which a series of successive branches simulate a continuous axis.
syncarpous carpels, xxiv.
syncarpous ovary, xxiv.
syngenesious stamens, xxii.

TAMARISCINEÆ, 125.
Tamarisk, 126.
TAMARISK FAMILY, 125.
Támarix, 126.
Támus, 723.
Tanacétum, 393.
Tansy, 393.
tap-root, ii.
Taráxacum, 429.
Tare, 191.
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